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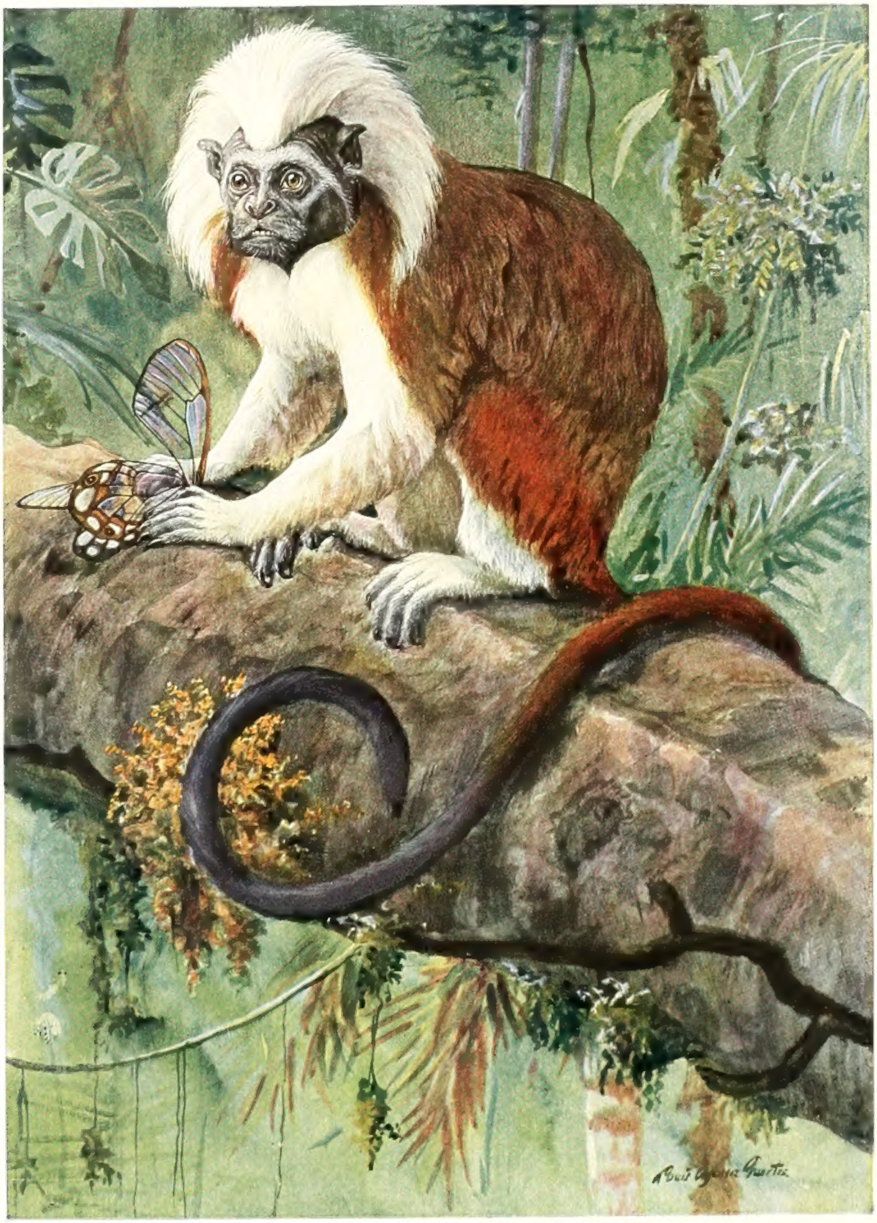
Louis Agassiz Fuertes

Seniocebus meticulosus Elliot.

A
REVIEW
OF
THE PRIMATES

BY

DANIEL GIRAUD ELLIOT, D. SC., F. R. S. E., &C.

Commander of the Royal Orders of the Crown of Italy, of Frederic of Wurtemburg, and of Charles the Third of Spain; Knight of the Imperial and Royal Orders of Francis Joseph of Austria, of the Dannebrog of Denmark, of the Albert Order of Saxony, of St. Maurice and St. Lazare of Italy, of Isabella the Catholic of Spain, of Christ of Portugal, of Philip the Magnanimous of Hesse, etc., etc.; Fellow of the Royal Society of Edinburgh, of the Zoological Society of London; A Founder and ex-Vice-President of the Zoological Society of France; A Founder and ex-President of the American Ornithologists' Union; Honorary Member of the Nuttall Ornithological Club; of the Linnæan Society of New York; of the New York Zoological Society; Member of the Imperial Leopoldino-Carolina Academy of Germany, of the Academy of Natural Sciences of Philadelphia, of the Academy of Sciences of New York, of the Société D'Acclimatation of Paris, of the New York Historical Society; Corresponding Member of the Royal Academy of Sciences of Lisbon, of the Natural History Society of Boston, etc., etc.

MONOGRAPH NO. 1
VOLUME I

LEMUROIDEA
Daubentonia to Indris

ANTHROPOIDEA
Seniocebus to Saimiri

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CORRECTION.

The date 1912 on the title-pages of "A Review of the Primates," by D. G. Elliot, forming Monograph I. of the Monograph Series of the publications of the American Museum of Natural History, should be corrected to *June, 1913.* Although all the text, except the Appendix in Volume III, was printed in 1912, unexpected delay in the preparation of the colored plates prevented the issue of the work till June 15, 1913.

AMERICAN MUSEUM OF NATURAL HISTORY.

NEW YORK, JULY 1, 1913.

PREFACE.

This "Review of the Primates" is the result of a casual suggestion of my friend Frank M. Chapman, Esq., that I should "write a book on Monkeys." The magnitude of the task—to compel all the described forms of the Primates to present themselves in their representatives for critical examination and comparison—was thoroughly appreciated, and also it was equally well understood that no Institution in the world contained a collection of these animals sufficiently large to permit a work like the present to be successfully completed by its aid alone. For over a century the Primates have been a subject of careful study by Naturalists of all lands, some most eminent Zoologists having devoted their investigations to them almost exclusively, and consequently the types of the many species were scattered throughout the various Museums of the world. To examine and compare these important examples was a necessity, for without a thorough knowledge of their characteristics no satisfactory progress toward the solution of their proper scientific standing could be reached. With representatives of the Primates, either from the eastern or western hemispheres, the Museums of the United States were but poorly provided, and a reliance for the material to prosecute the work was therefore to be placed upon the collections contained in European Museums and Zoological Gardens, and also in those of Eastern lands. Consequently the Author was obliged to visit all these various Institutions and study their collections. Twice were the Museums of England and the Continent visited, and many months passed each time examining the collections, and during a journey around the world, the Museums and Gardens of the far East were also visited and their collections carefully studied. The Author has seen and taken a description of nearly all the types of the Primates extant in the world to-day, and there is not a collection of these animals of any importance existing at the present time with which he is not familiar.

The results of five years' continuous study are therefore embodied in this work, and the conclusions given, no matter how they may disagree at times with the opinions expressed by other laborers in the same field, have in every case been reached only after careful and patient investigation.

Even with the collections of the world at one's service, material in numerous genera is still greatly lacking; and in some of these, whose members are prone to almost indefinite individual variation, it is exceedingly doubtful if material will ever be gathered together sufficient to enable the question, of how many separate forms actually do exist, to be satisfactorily and definitely determined.

A number of the types of the earlier describers, as well as some of later date have disappeared, and on account of this misfortune the species they represented cannot be established, and this is especially unfortunate when the name given has, for many years, been adopted and applied to the evidently wrong animal. To correct such errors will probably be a slow process, as it is difficult to overcome a bad habit once formed. Again numerous examples that served for types, by the passing of the many years since they received their names, have so deteriorated—from the accumulation of dust, the loss of their fur, and fading of their colors from unwise exposure to light—as to be no longer recognizable or of any value as the special representative of some particular species, and such cases are particularly to be regretted when the original description was so brief as to convey but a faint idea of the appearance of the animal.

The earlier writers seem to have depended mainly for the characters of their species on the colors of the pelage and its distribution, and rarely considered the more important characters of the crania. Their limited material gave them no idea of the great variation, mainly individual, that existed in the coloring of the pelage among members of numerous genera, and so were misled into believing their examples represented more than one species, when it was only the individual eccentricities of a very variable form that they were unknowingly considering.

Notwithstanding the vast accumulation of examples of the Primates from all parts of the world in the last twenty years, a number of important facts cannot yet be settled, nor will they be until much additional material is received.

In the recognition of apparently distinct forms, subspecies in only comparatively few cases have been accepted, because intermediates between what are recorded as species have rarely been found in this Order, and neither of two forms, no matter how closely they are evidently related can properly be deemed a subspecies, no intermediates having been observed. Also the Author has not seen his way to establish a subspecies between the dweller of an island and one of the mainland, because, no communication being possible, the appearance of intermediates would seem most improbable. Not so however, with the dwellers of contiguous islands which may at one time have been portions of a larger island, or where communication between the islands may be, or at an earlier period, has been, possible. Under such conditions subspecific forms may be found; but on the mainland where there is no evidence of a gradation from one form to another, subspecies may not be accepted.

The Author has dwelt upon this point, because it may occasion surprise to some who examine these volumes, to find how few subspecies comparatively have been accepted, and it seemed best to explain how these are regarded, and what, as the Author conceives it, is the only method by which they can be produced. In the present work there are altogether fifty-five complete monographs, with about six hundred species, for it was deemed best that every genus should be treated monographically. Of course these vary greatly in importance and in the number of their species, from one only, to over eighty, but the average would be about twelve to a genus. Each member of the Order has been treated after the following method. First a general review is held of the genus accepted, the type fixed and description given; then remarks are made on the appearance and general habits of the species the genus contains, followed by a review of the literature and the geographical distribution, and a key by means of which it is possible that all the species of that particular genus may be recognized. Then each species is taken up in regular sequence, its synonymy given and the type locality and geographical distribution recorded; the present location of the type if existing, is then told, after which the peculiar characters of the species if it possesses any, are given, followed by such remarks as may be necessary, upon the relationship the species under review may have with some other in the genus; then a full description and measurements of the type if possible, concluding with an account of the habits so far as they may be unquestionably known.

Of course it is not to be expected that a work such as this can be produced solely by the unaided efforts of one individual no matter how long or conscientiously he may labor, and many times he is obliged to rely upon the aid of his colleagues as the work progresses. Consequently during the past five years the Author has been assisted in many ways by a large number of his scientific friends. And here he may be permitted to express the great pleasure and gratification he felt at the universal courtesy and kindness he received at all the great Museums in Europe and the East, as well as in those of his own land, by the officers who had charge of the great collections. Every possible facility was given him and unrestricted access to the collections at all times; and wherever the Author went, his simple request proved to be an 'open sesame' to the treasures he desired to see, and everything was done to forward his investigations and make his visit profitable as well as agreeable.

Among the large number therefore to whom the Author feels especially indebted beginning in his own land, he would first mention his distinguished friend, Professor Henry Fairfield Osborn, LL.D., D.Sc., Sc.D., etc., President of the American Museum of Natural History, who from the beginning has taken a deep interest in this work, and through whose efforts solely its publication in the present attractive form has been made possible. The Author desires therefore to express his lively appreciation of a scientific colleague's aid in making accessible to mammalogists throughout the world a contribution, the result of much weary labor, towards the elucidation of the members of the most important Order in the Animal Kingdom.

To Dr. J. A. Allen, Curator of Mammalogy and Ornithology, and Dr. W. K. Gregory, Assistant in Vertebrate Paleontology in the American Museum of Natural History, New York, the Author is indebted; especially to Dr. W. K. Gregory who gave the most careful supervision to the publication of the work, as well as to the illustrations that so much enhance the value of the volumes, a labor that was by no means slight nor free from various difficulties. To Witmer Stone, Esq., Curator of Ornithology in the Philadelphia Academy of Natural Sciences; to G. S. Miller, Esq., Assistant Curator Department of Mammals, and N. Hollister, Esq., Assistant in the same Department of the United States National Museum the Author is under many obligations. And finally his thanks are due to F. J. V. Skiff, Esq., Director of the Field Museum of Natural History, Chicago, for the loan of skulls from that Institution.

In England he would express his great obligation to Oldfield Thomas, Esq., Head of the Department of Mammals in the British Museum, where the collection of the Primates, regarding it in a general sense, is probably the finest and most complete in the world, the Author was permitted to work as if it were his personal property, Mr. Thomas only insisting that all novelties discovered should be described by the Author, and not as would naturally be expected, by the Head of the Department. Also to Guy Dollman, Esq., Assistant in Mammalogy in the same Institution, who aided the writer in many ways, and whose intimate knowledge of the collection and especially the location of the specimens by which much time was saved, was of the greatest advantage. Also to R. Lydekker, Esq., who permitted the removal from the cases of many mounted specimens, all of which were in his keeping. In Paris, Monsieur le Docteur E. L. Trouessart, in whose charge is the magnificent collection of Mammals in the National Museum of the Jardin des Plantes, assisted the Author by every means in his power, and placed at his disposal that wonderful collection of the Primates which contains so many of the types of the old Authors, an intimate knowledge of which is necessary for the determination of the species they represent. In the great Museum at Leyden, Holland, so rich in specimens of the Lemuroidea and examples of other Primates from the islands of the Eastern Archipelago, the Director, Dr. F. A. Jentink, and in his absence Administrator Vesteroon Wulverhorst made the Author's labors in the Institution easy and pleasant. In Berlin, Herr Paul Matschie, Curator of Mammalogy, placed the grand collection of Primates so rich in examples of African species especially of Chimpanzees, Gorillas, Guenons, (LASIOPYGA) and COLOBUS or *Guerezas*, at the Author's service, and aided him in every way possible. Also to Herr O. Neumann for information concerning the new species of monkeys obtained by him in East Africa and which were deposited in the Museum. The collection of Chimpanzees in this Institution is the largest in the world, and exhibits the wonderful individual variation that exists in the skulls and coloring of the skins of these apes; variations that serve more to perplex than to enlighten the observer on the mystery of species, and what really constitutes such a rank. In Dresden the Author's thanks are due to Dr. A. Jacobi, the Director of the Museum, who aided him in becoming familiar with certain important types in the collection under his charge; and in the splendid Museum in Vienna, to the Director Dr. F. Steindachner, and custodian Dr. L. R. Lorenz, the Author is greatly indebted for many attentions and assistance in examining the collection which comprises the examples procured by Natterer during his sojourn in Brazil, as well as important specimens of the Gorilla procured by Du Chaillu in the Gaboon, West Africa.

To Professor Dr. R. Hertwig, Director; Dr. W. Leizewitz and Dr. C. Hellmayer, Custodians of the Zoological Museum, Munich, in the collection of which are contained Spix's types, and a very large number of examples of the crania of Bornean Ourangs obtained by Selenka, the Author is under many obligations for their courtesy during his sojourn in their city. In Frankfort-on-the-Main, by the courtesy of the Acting Director, Dr. Drevermann of the Senckenbergian Museum, the Author was enabled to examine the skins and skeletons of PSEUDOGORILLA MAYEMA? which, from the disappearance of the type, are the only specimens known in Europe at the present time.

In Calcutta, Dr. N. Annandale, the Superintendent of the Natural History Section of the Indian Museum, unfortunately was absent in Burma, but access to the collections was afforded, and every facility for inspecting the types of Blyth and other of the earlier Indian Naturalists, which still survived. In the various Zoological Gardens of Europe and the East many interesting and valuable species were seen, and in the Zoological Gardens at Antwerp was discovered the handsome Monkey which the Director, M. l'Hoest, kindly permitted the Author to describe under the name of C. INSIGNIS. In the Gardens at Cairo, Egypt, under the pilotage of his friend Captain Flower, the Director, several specimens of the rare monkeys of the genus ERYTHROCEBUS were shown to the writer and descriptions taken. It was the skins of these same animals that, some eighteen months later in the British Museum, served the Author as the types for two new species. In the Calcutta Gardens were some fine examples of HYLOBATES HOOLOCK and the Author's ears were deafened by their powerful voices; and also a splendid specimen of the somewhat rare PITHECUS ANDAMANENSIS was seen; and in the Zoological Gardens of Kyoto, Japan, were numerous living examples of the peculiar Japanese species P. FUSCATUS, and one very fine adult male MAGUS OCHREATUS. The Author also desires to express his thanks to Mr. R. I. Pocock, Superintendent of the Gardens of the Zoological Society in Regent's Park, London, for his assistance in examining the Primates under his charge.

As it was not possible to assemble in one locality all the material it was desirable to employ for ilustrating the work, photographs of the crania had to be taken in different places. Those of the crania of PSEUDOGORILLA MAYEMA? were most kindly sent to the Author by Dr. O. zur Strassen, Director of the Senckenbergian Museum at Frankfort-on-the-Main; those of the Ourang crania were executed at the Zoological Museum in Munich; those of GORILLA GORILLA, *G. g. jacobi* and *G. g. matschie,* from the crania in the Berlin Museum. A certain number were also obtained from the American Museum of Natural History, the United States National Museum, the Field Museum of Natural History, Chicago, the Philadelphia Academy of Sciences, and especially the British Museum.

The Author cannot refrain from calling attention to the illustrations produced by the methods and greatly improved instruments invented by the Special Photographer of the American Museum, Mr. Abram E. Anderson, which for clearness and perfection of detail, have possibly not been heretofore equalled. Mr. Anderson was sent to London expressly to photograph the crania in the British Museum, and the illustrations given in the plates exhibit faithfully the particular characteristics of the genera and subgenera. Those skulls which are lacking are fortunately very few.

The colored illustrations have been selected from those published in the Proceedings of the Zoological Society of London, chiefly by the great artist, my friend the late Joseph Wolf, and, through the kindness of the Council of the Society, it is permitted to reproduce them in this work. Those of the different species from life were taken by Mr. Lewis Medland, F.Z.S., of London, and certain excellent figures taken by Mr. E. L. Sanborn from animals living in the menagerie of the New York Zoological Society, and presented by the Trustees for this work. Measurements of the Primates, such as those confined to the dimensions of the skin removed from the body, are of comparatively little value as there is probably considerable difference in size between the average stuffed specimen and the living animal. But those given of the crania are reliable and important, and not subject to variation after the death of their owners. Body measurements in these volumes, unless followed by (Collector), are taken from the dried skins, and are always given in millimetres. Those of the hands and feet, as the skin of these members usually contains the bones, are reliable for length, but the figures given for dimensions of the body and tail can, in the majority of cases, only be regarded as approximate. Mammals, unlike birds, vary greatly in their dimensions even among examples of the same species, and therefore, equal importance, when taken from the skin, cannot be attached to them.

When a species in this work is mentioned, the name adopted is printed in capital letters, but in italics for subspecies and synoptical names. Measurements are always given in millimetres.

All the species and races known to the Author that have been described prior to June 1st, 1912, are included in the three volumes. After the date mentioned, the advanced state of the press work did not permit of any additions, except in an Appendix to the third volume.

June 1st, 1912. D. G. E.

INTRODUCTION.

The Primates, which is the first of the Linnæan Orders of the Mammalia, was originally composed of four genera HOMO, SIMIA, LEMUR and VESPERTILIO, Man, Monkeys, Lemurs and Bats. The last has been dropped by general consent, and the Order as now constituted combines the Bimana and Quadrumana.

Some Naturalists have contended that the Lemurs should be placed in a separate Order, and my friend the late Prof. A. Milne-Edwards enumerates the following characters as justifying this view: The bell-shaped, diffused and non-deciduate placenta, vast size of the allantois, uncovered condition of the cerebellum, cranial structure, inferior incisors, and structure of the extremities, (developed pollux, and discoidal terminations of the fingers).

While admitting the importance of these characters, *St. George Mivart has made some critical remarks regarding the decision of Prof. A. Milne-Edwards, and fairly well establishes the fact that the better course would be to leave the LEMUROIDEA as a Suborder of the Primates as "there can be no doubt that Man-Apes, (including Baboons and Monkeys), and Half-Apes together constitute a group capable of convenient and very distinct Zoological definition," and he defines the group as follows: *"Unguiculate, claviculate placental mammals, with orbits encircled by bone; three kinds of teeth, at least at one time of life; brain always with a posterior lobe and calcarine fissure; the innermost digits of at least one pair of extremities opposable; hallux with a flat nail or none; a well-developed cæcum; penis pendulous; testes scrotal; always two pectoral mammæ."*

The Order Primates then comprises two Suborders LEMUROIDEA and ANTHROPOIDEA. The first contains the singular nocturnal animals known as Lemurs which are distinguished from the members of the other Suborder by the following characters:

Orbit opening into the temporal fossa beneath the postorbital bar, (TARSIUS excepted). The lachrymal foramen situated outside the orbital margin. The second digit of the hand may be merely a rudiment, but the same digit of the foot has a long pointed claw. The cerebrum does not overlap the cerebellum, and the hemispheres have few convolutions. Posterior cornu of lateral ventricle very small; pollux large; posterior cornu of hyoid shorter than anterior; clitoris perforated by the urethra; uterus two-horned; placenta bell-shaped, diffused, non-deciduate; allantois very large; transverse portion of colon convoluted on itself. Abdominal mammæ sometimes present.

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*Proc. Zool. Soc. Lond., 1873, p. 504.

The LEMUROIDEA contains three Families, the first two aberrant; DAUBENTONIIDÆ with its single species the curious Aye-Aye, and TARSIIDÆ, for a long time supposed to have also a single species, but several additional ones have been lately recognized. The third Family is NYCTICIBIDÆ with four Subfamilies, LORISINÆ, the Slow Lemurs with four genera: LORIS with two species; NYCTICEBUS with eleven species; ARCTOCEBUS with two species; and PERODICTICUS with five species. The last genus, PERODICTICUS, for over two hundred years was represented by only one species, Bosman's Potto, discovered by that traveller in 1705; but within a brief period no less than four others have been described, showing how easy it is to overlook distinct forms among these nocturnal animals, even though their habitats had been often penetrated by zealous Naturalists eager to make known the creatures that had heretofore escaped all research. In this same Subfamily is the genus ARCTOCEBUS with its single species from Old Calabar, remarkable for its strongly flexed fingers, which require considerable force to extend them, and when this is taken away they at once become flexed again. The second Subfamily is GALAGINÆ, the Bush Babys, with one genus and twenty-three species and six subspecies, followed by LEMURINÆ, the true Lemurs, with seven genera and thirty-eight species. The last Subfamily is INDRISINÆ with three genera including the Woolly Lemur, Safakas, and Indris, having in all five species and five subspecies.

While Madagascar alone possesses the Aye-Aye and the species of the Subfamilies LEMURINÆ and INDRISINÆ, none of those contained in GALAGINÆ are found on that island but belong to the near-by African Continent. The Tarsier are natives of the islands of the Indo-Malayan Archipelago and the Philippines, while the Slow Lemurs (LORISINÆ) are met with in the southern part of the Indian Peninsula and the Island of Ceylon.

The second Suborder, ANTHROPOIDEA, is distinguished from LEMUROIDEA by its members having the orbit separated from the temporal fossa by a bone which is united to the postorbital bar; and the lachrymal foramen is inside the orbital margin. The second digit of the hand is well developed, and the same digit of the foot has usually a flat nail, except in CALLITRICHIDÆ. The cerebrum almost completely covers the cerebellum, and the hemispheres are considerably convoluted. Placenta deciduate, discoidal. Allantois small, uterus not two-horned, anterior cornu of the hyoid shorter than the posterior, no abdominal mammæ present, and the transverse portion of the colon not convoluted.

This great Suborder, containing, as it does, all the existing Apes, Baboons and Monkeys, is divided into two groups: 1st, the PLATYRRHINE, those species having the nose flat, septum wide and the nostrils directed outward, and embracing all the Monkeys of the New World; and 2nd, the CRATARRHINE, having the nose narrow, nostrils directed downward and the septum narrow, including all the species of the Old World.

As may well be imagined the variations in size to be witnessed among the members of this Suborder are very great, the extremes being the Gorilla and the small, delicate Marmoset or Titi. And with the difference in size, there is also great variety in the shape of head and body, and length of limbs and tail. This last appendage is entirely absent in the great Apes of the Families HYLOBATIDÆ and PONGIIDÆ; is of varying length from a mere knob, to longer than head and body in PITHECUS; much longer than head and body in many species of LASIOPYGA and PYGATHRIX, and nearly three times the body's length in ATELEUS. The heads of the Primates also are remarkable for their many shapes from the round head of ATELEUS, the occipital protruding skull of SAIMIRI, the almost human braincase of PAN, to the narrow high-crested crania of GORILLA and PONGO. The rostrum also exhibits many shapes producing conspicuous differences in the physiognomy of the many species, the extremes perhaps being the nearly flat-faced members of the CEBIDÆ and the greatly lengthened muzzle of many of the Baboons as P. CYNOCEPHALUS and P. SPHINX, the latter exhibiting a rostrum covered with prominent ridges, and decorated with brilliant and highly contrasted colors. Many of the LASIOPYGIDÆ have ischiatic callosities, some brilliantly colored, and these at certain seasons become enormously developed covering not only the buttocks, but also extending on to the tail which is greatly swollen. However attractive this may be to Baboons, to human eyes such exhibitions are repellent. The nose, save in one exceptional case, is not a very prominent member among the Primates, although, as in Man, it has many shapes, from the aquiline in HYLOBATES, most pronounced in H. HOOLOCK, the retroussé nose of RHINOPITHECUS, and the extraordinarily lengthened member of NASALIS. The limbs of the Primates show great diversity when compared between distinct species, or between the fore and hind limbs of one individual. Thus we have the rather short stout limbs of equal length in PITHECUS, the lengthened slender limbs of ATELEUS, the long arms and short legs of HYLOBATES and SYMPHALANGUS, and carried to an extreme, considering the difference in size, in PONGO, where arms and hands reach nearly to the ankles when the animal is in an erect position. All kinds of texture characterize the pelage of the Primates, from velvety softness to one that is coarse and harsh. The hair assumes various arrangements, sometimes forming coronal or occipital crests, occasionally both, or fringing the face with obtrusive whiskers, or projecting over the forehead like the peak of a cap. Long curled moustaches are rarely present, as in a species of LEONTOCEBUS, exhibiting a remarkable growth. In many species the hair of the head is short and compact, sometimes with horn-like erections over the forehead, or on the sides of the head as in CEBUS, while in one species PITHECUS ALBIBARBATUS, the entire face is surrounded and the head covered by long hair in the semblance of a huge wig. On the body the hair is often long over the shoulders forming a mantle, and in other cases falls from the sides or over the rump in long graceful fringes as in most of the black species of COLOBUS. The tail as a rule is covered by short hair, but the end is sometimes tufted as in RHINOPITHECUS and COLOBUS, and these tufts or tassels in some species of the last genus are greatly enlarged, equal in one species to one third the length of the tail. Only one species has a bare tail with end tufted SIMIAS CONCOLOR, an extraordinary animal. All colors are shown in the different pelages many of vivid and contrasting hues, and while some one member of nearly all the genera has bright coloring, probably LASIOPYGA, embracing as it does such a large number of species, contains more highly colored members than any other genus of the Primates.

Beards are not infrequently met with, in fact in ALOUATTA this appendage to the face of the species is rather characteristic of the genus; and in all the Families, save PONGIIDÆ, the hairs of the arms are directed towards the wrist, but in the members of that Family the hairs of arm and forearm grow in opposite directions the first downward and the latter upward meeting at the elbow, and as it is supposed these great Apes usually sit with their arms crossed, Darwin imagined that this peculiar arrangement of the hair was to permit the rain to run off at the elbow. Ears of the Primates are well developed and pointed, but the lobe is absent, the Gorilla alone having it present in a rudimentary condition. The voice of the Apes is described in the Gorilla as a roar, but in the Chimpanzee as a gruff bark-like tone.

Some of the small Monkeys of the New World emit a whistling note, often plaintive, but the most wonderful voices are those possessed by the species of ALOUATTA in South America, and of HYLOBATES of the eastern hemisphere. In these the throat is large and thick and the larynx greatly developed. The basihyal is much enlarged and is expanded into a bony capsule which is lined by a continuation of the thyroid sac, and this peculiar formation enables the animal to produce a volume of sound that can be carried, it has been estimated, for a distance of three miles.

The brain of the great Apes is slightly more than half the size of that of Man. The Gorilla, like all of the Quadrumana, has the brain fully developed before the permanent set of teeth are completed. At that period the animal has not, of course, its full stature, and the skull continues to grow with the animal, but the brain does not, the skull becoming heavier and thicker in bone with broader and longer crest, but the brain itself is stationary. *"The relative size of the brain varies inversely with the size of the whole body, but this is the case with warm-blooded vertebrates generally. The extreme length of the cerebrum never exceeds, as it does in Man, two and a quarter times the length of the basi-cranial axis. The proportions borne by the brain to its nerves are less in the Apes than in Man as also is that borne by the cerebrum to the cerebellum. In general structure and form the brain of Apes greatly resembles that of Man. Each half of the cerebrum contains a tri-radiate lateral ventricle, and though in some LASIOPYGIDÆ the posterior cornu is relatively shorter than in Man, it again becomes elongated in the CEBIDÆ, and in many of the latter it is actually longer relatively than it is in Man. The posterior lobes of the cerebrum are almost always so much developed as to cover over the cerebellum, the only exceptions being the strangely different forms *Mycetes,* (ALOUATTA), and HYLOBATES, (SYMPHALANGUS), SYNDACTYLUS. In the latter the cerebellum is slightly uncovered, but it is so considerably in the former. In *Chrysothrix,* (SAIMIRI), the posterior lobes are much more largely developed relatively than they are in Man. The cerebrum has almost always a convoluted external surface. In this group, however, as in mammals generally, a much convoluted cerebrum is correlated with a considerable absolute bulk of body. Thus in *Hapale,* (CALLITHRIX), (and there only), we find the cerebrum quite smooth, the only groove being that which represents the Sylvian fissure. In *Simia,* (PONGO), and GORILLA, and *Anthropo-*

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*St. George Mivart, Encycl. Britan., 9th Ed., Article Ape.

pithecus, (PAN), on the contrary, it is very richly convoluted. A hippocampus minor is present in all Apes, and in some of the CEBIDÆ it is much larger relatively than it is in Man, and is absolutely larger than the hippocampus major. Of all Apes the Ourang has a brain which is most like that of Man; indeed it may be said to be like Man's in all respects, save that it is much inferior in size and weight, and that the cerebrum is more symmetrically convoluted and less complicated with secondary and tertiary convolutions. If the brain of *Simia,* (PONGO), be compared with that of GORILLA, and *Anthropopithecus,* (PAN), we find the height of the cerebrum in front greater in proportion in the former than in the latter; also the bridging convolutions, though small, are still distinguishable, while they are absent in the Chimpanzee. Nevertheless the character cannot be of much importance since it reappears in ATELES, (!) while two kinds of the genus CEBUS (so closely allied as to have been sometimes treated as one species) differ strangely from each other in this respect. The corpus callosum in Apes generally, does not extend so far back as in Man, and it is very short in PITHECIA. In the Ourang and Chimpanzee there are, as in Man, two corpora albicantia, while in the lower Monkeys there is but one. The vermis of the cerebellum gives off a small lobule, which is received into a special fossa of the petrous bone. Certain prominences of the medulla oblongata, termed corpora trapezoidea, which are found in the lower mammals, begin to make their appearance in the CEBIDÆ."

The number of pairs of ribs varies considerably among the genera of the Primates. The GORILLA and PAN have thirteen; the OURANG twelve same as Man; HYLOBATES thirteen, but sometimes sixteen (Flower and Lydekker); COLOBUS twelve; PYGATHRIX and CERCOCEBUS twelve, sometimes thirteen; LASIOPYGA and ERYTHROCEBUS twelve; PITHECUS twelve, sometimes thirteen, (P. NEMESTRINUS); PAPIO thirteen; CYNOPITHECUS twelve; MAGUS twelve; ALOUATTA, LAGOTHRIX, and ATELEUS fourteen; CEBUS fourteen, but last pair very short almost rudimentary in some species; PITHECIA twelve and thirteen (P. CHIROPOTES); CALLICEBUS and CALLITHRIX twelve or thirteen; AOTUS fourteen; SAIMIRI thirteen; NYCTICEBUS sixteen; PERODICTICUS fifteen. Of the vertebræ PAN, PONGO and GORILLA have 4 lumbar, 3 sacral, and 5 caudal; HYLOBATES has 5 lumbar; COLOBUS 7 lumbar, 3 sacral and 28 caudal; PYGATHRIX 6 and 7 lumbar and 3 sacral; LASIOPYGA 6 and 7 lumbar, 3 sacral, 26 caudal; PITHECUS, MAGUS and CYNOPITHECUS 7 lumbar and 3 sacral, while MAGUS has 8 caudal, and CYNOPITHECUS has 5; PAPIO 6 lumbar and 3 sacral; ALOUATTA

5 lumbar, while Lagothrix and Ateleus have but 4; Cebus has 5 and 6 lumbar, while Aotus has 8, and 24 caudal; Pithecia 6 lumbar; Callicebus and Saimiri 7 lumbar, the last genus with 28 to 30 caudal; Callithrix has 6 and 7 lumbar, and 27 to 33 caudal; Nycticebus 6 and 8 lumbar, and 8 and 11 caudal, and Perodicticus 7 lumbar and 20 caudal vertebræ.

The Apes and Monkeys of the eastern hemisphere have thirty-two teeth, the same as in Man, but the Primates of the western hemisphere, excepting those of the Family Callitrichidæ which also have thirty-two, have thirty-six, the excess being two pairs of premolars, one pair each in the upper and lower jaws. The canines in the males of all Primates are large and extend beyond the tooth rows, and are separated from the incisors by a diastema.

The ANTHROPOIDEA have been divided by Authors into five Families, Callitrichidæ, (usually designated as *Hapalidæ*), Cebidæ, *Cercopithecidæ,* (Lasiopygidæ), *Simiidæ* (Pongiidæ of this work) and *Homonidæ.* To these in the present work has been added Hylobatidæ comprising the Gibbons, which on account of their structure and mode of life seem more properly separated from, than united with, the great Apes. The Gibbons are the only Apes that habitually walk in an upright posture.

The Monkeys of the New World, excepting those of the genus Cacajao, differ from all others, besides the number of the teeth in having more or less prehensile tails, this member being frequently bare beneath for a greater or less space at the tip, forming a grasping surface and preventing slipping; and the members of the genus Ateleus are so expert with this organ as to make it serve the purpose of a fifth hand, not only for holding on to the limbs of trees, even suspending the animal without any other support, but often for conveying food to the mouth. Members of other genera, as Brachyteleus, Alouatta, Lagothrix, Cebus, etc., are provided with prehensile tails but not all have a bare surface beneath at the tip, consequently the grasp is much less firm and secure, and their dexterity in the use of this organ much less. The species of Cacajao have very short tails of no use to their owners either to assist them in their various movements, or for adornment.

There is much difference in size among the American Monkeys from the small Squirrel Monkey (Saimiri) and the *Douroucouli* (Aotus), to the Howlers (Alouatta) the largest species in the New World. These last are remarkable for the great development of the mandible especially of the angle and ascending ramus, particularly noticeable in the male, and is designed to protect and enclose the vocal organs which are of very great size.

The shape of body and the manner in which the limbs are proportioned to it, vary to a considerable degree in these American Monkeys, and it would be difficult to find a greater contrast than the slender, slim-waisted body, and long, attenuated limbs of ATELEUS covered with smooth straight hair, and the thick-set, robust body, moderately long, stout limbs, and woolly coat of ALOUATTA.

The genus with the largest number of species in the New World is CEBUS containing the well known Capuchin Monkeys, remarkable for their restless, mischievous dispositions, and the wonderful diversity they exhibit in the coloring of their coats.

No American Monkey possesses either cheek pouches or callosities, nor is the external auditory meatus ever present.

The species of the CRATARRHINE group are very different in appearance from the Monkeys of the New World. The limbs are sometimes of equal length, but generally the legs are longer than the arms except in the great Apes whose arms are invariably longer than the legs. The thumb when present is opposable to the fingers, as is also the great toe to the digits of the foot, and is always shorter than the other toes. The tails vary in length from a mere knob to one exceeding the head and body. Many of the species possess cheek pouches, and callosities are also present in many, sometimes of large dimensions and colored with the most brilliant hues. The Family LASIOPYGIDÆ, to which precedence is given in the arrangement of the Suborder, contains the Baboon, Guenons, Langurs, Guerezas, etc., in fact all the Old World species of ANTHROPOIDEA except the Man-like Apes of the Families PONGIIDÆ and HYLOBATIDÆ.

The Baboons, which come first in the arrangement of the Families are, besides other physical traits, characterized by an elongate muzzle, which in one species at least is decorated by brilliant coloring, (P. SPHINX Linn.). The limbs are nearly equal, but the tails are very variable in length and in the density of their hairy covering. The canine teeth are very long, in some cases prodigiously so, and capable of inflicting a wound as serious as that of almost any dagger. The cheek pouches, in all species that have them, are constructed of folds of skin which expand when food is forced into them, contracting again when emptied and then giving no indication of their presence. These pouches, being placed on the outer side of the jaw, are no hindrance to the mastication of any food, and are employed mainly for the storage of such edibles as the animal does not desire to consume at the moment. These receptacles even when full are no obstruction to the voice. Besides these pouches large air sacs are present in the neck. The species of the two genera MAGUS and CYNOPITHECUS, although ranged among the Baboons are generally known as Apes, probably on account of the practical absence of a tail, resembling, as they do, in this respect, the great Man-like Apes. The coat of the Baboon varies considerably in texture from short silk-like hairs to almost a woolly fur observed in those inhabiting a cold clime. The Mangabeys of the genus CERCOCEBUS, in some respects, are intermediate between the true Baboons (PAPIO), and the Guenons (PYGATHRIX). They have no laryngeal sacs, but possess the posterior fifth cusp in the last molar of each lower jaw. Their form is more slender than that of the Baboons, resembling the Guenons', and like them they have long tails, but the often brilliant coloring of the Guenon is not seen in the coat of the Mangabey. The genus RHINOSTIGMA contains but one species remarkable for its peculiar physiognomy; the long white stripe from the forehead over the nose to the upper lip, and the presence of a fifth posterior cusp on each of the last lower molars, cause it to be a link between the Mangabeys and Guenons. The Guenons are the most numerous in species of any of the groups belonging to the LASIOPYGIDÆ, are more slender in form than the Mangabeys, have not the last cusp on the posterior lower molar, and possess coats of many colors some with strongly contrasting hues, and long tails. MIOPITHECUS has two species the smallest of the Guenons, and ERYTHROCEBUS follows with a dozen species, long-legged and frequenters of the plains, rarely sojourning in forests. The Langurs, PYGATHRIX, placed in a separate subfamily, are also of a slender form with the legs longer than the arms, very long tail, cheek pouches absent, and a sacculated stomach of great complexity. *Sir William Flower has described this organ as follows: "An ordinary stomach must be supposed to be immensely elongated and gradually tapering from the cardiac end to a very prolonged pyloric extremity. Then two longitudinal muscular bands, corresponding in situation to the greater and lesser curvature of an ordinary stomach—the former commencing just below the fundus, and the latter at the cardiac orifice, and both proceeding toward the pylorus—are developed so as to pucker up the cavity into a number of pouches, exactly on the same principle as the human colon is puckered up by its three longitudinal

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*Animals Living and Extinct, p. 725.

bands. These pouches are largest and most strongly marked at the œsophageal end, and becoming less and less distinct, quite cease several inches before the pylorus is reached, the last part of the organ being a simple, smooth-walled tube. The fundus or cardiac end of the stomach is formed by a single large sac, slightly constricted on its under surface by the prolongation of the inferior longitudinal band, or that corresponding to the great curvature. The œsophagus enters into the upper part of the left, or pyloric end of this sac, or rather at the point of junction between it and the second (also a very large) sacculus. Furthermore the whole of this elongated sacculated organ is, by the brevity, as it were of the long curvature, coiled upon itself in an irregular spiral manner, so that when *in situ* the pylorus comes to be placed very near the œsophageal entrance."

The Proboscis Monkey (NASALIS) is unique in one respect, the nose elongate to such a degree as to make it appear a caricature, otherwise the animal resembles in form the Langurs. The Guerezas, (COLOBUS), are chiefly noted for the rudimentary condition of the pollux or its absence altogether; the long hairs falling as a fringe along the side or over the back, and the long tails usually with a conspicuous tuft.

The species of RHINOPITHECUS and SIMIAS are noted for the diminutive nose turned up at the tip. The HYLOBATIDÆ or Gibbons possess a skull not produced at the vertex, long arms with the hands reaching to the ground when the animal stands erect, short legs and small ischial callosities. The species of the genus SYMPHALANGUS differ from those of HYLOBATES in having the second and third digits of the foot united by webs as far as the last joint.

The great Apes form the family PONGIIDÆ, and have the skull produced at the vertex in PONGO, but not in GORILLA or PAN. Ischial callosities are absent; arms longer than legs; hands reaching to the ankles in the Ourang when the animal is erect, only to the knees in the Gorillas and Chimpanzees. Upright bony crests are never seen on the crania of the last named, but the other two have frequently conspicuously large bony crests in adult males. The Ourang possesses an *os centrali* but this, as in Man, is absent in the other two genera.

As in the rest of the ANTHROPOIDEA the skull of the male can always be recognized by the elongate canines. When walking, the Gorillas and Chimpanzees go on the knuckles of the hands and the soles of the feet; but the Ourangs proceed chiefly by swinging from tree to tree by the assistance of their long arms.

CLASSIFICATION.

The Order Primates containing, as it does, Man and the creatures which are nearest allied to him, must be regarded as the most important of all those recognized as belonging to the Animal Kingdom. The various species contained within it, from Man to Marmoset, form a fairly homogeneous group, with which the Lemuroids are associated in a subordinal division. It is a moot point with some whether the Lemurs should be considered members of the Order, having any rank whatever within it, as about the only claim they have to the position is the possession of the opposable great toe, which however is also found in a species of an altogether different Order, the Opossum of the Carnivores. But, no matter how slight may be the pretensions of the Lemurs for admission to the ranks of the Primates, yet, by the almost general acquiescence of Mammalogists, they have of late been accepted as occupying a recognizable place in the Order.

The Lemuroids are divided into three Families with four Subfamilies, having twenty genera and subgenera embracing one hundred and six species forming the Suborder LEMUROIDEA. The remaining Primates are separated into two divisions containing respectively the Old World and New World Species, designated as the CRATARRHINE and PLATARRHINE. The first, in this work is divided into three Families with two Subfamilies containing twenty-two genera, and about 320 species; the second with two Families, having four Subfamilies, thirteen genera and about 150 Species. The dentition observed in the Order is both diphydont and heterodont; the members living in the eastern hemisphere possessing thirty-two teeth, those of the western hemisphere having thirty-six, except the members of the Family CALLITRICHIDÆ which have thirty-two, the excess in the others being accounted for by the presence of an extra pair of premolars in each jaw. In the arrangement adopted the species ascend from the lowest form to the one considered as holding the highest rank, exclusive of Man, but standing nearest to him.

The two aberrant forms of the Lemuroidea, DAUBENTONIA and TARSIUS head the list, the former remarkable for the peculiar structure of the limbs and the specialized second finger, and the rodent teeth; the latter for its lengthened legs, digits provided with discs, and large eyes. These comprise the Families DAUBENTONIIDÆ, and TARSIIDÆ. Following these but still of a low order in the Family NYCTICIBIDÆ, Subfamily LORISINÆ, come LORIS and NYCTICEBUS, the Slender and Slow Lori, with large expressionless eyes, pointed noses and tailless bodies. ARCTOCEBUS succeeds with its reflexed finger, wide spreading thumb and rudimentary tail, to be followed by PERODICTICUS whose tail is about one third the length of the body and having long slender processes from the anterior dorsal vertebræ projecting through the skin. The Subfamily GALAGINÆ follows with its genera GALAGO with three subgenera and thirty species, having the curious power of folding the ears at will; and HEMIGALAGO. Next comes the Subfamily LEMURINÆ containing the true Lemurs and their near allies. It has seven genera, with, altogether, thirty-five species. The members of the seven genera present many characteristic differences from each other, in size, coloration, and peculiarities of crania. The members of one genus, CHIROGALE, afford a transition between GALAGO and LEMUR. This genus and MICROCEBUS have been considered by some Authors as not divisible, and while their members bear a resemblance to each other, yet they each exhibit sufficient characters to make it advisable to keep them in different genera. They are small animals, some of them the most minute of the LEMUROIDEA. The last Subfamily of this Suborder is INDRISINÆ containing the largest member of the Lemuroidea yet known. The adults have thirty teeth, and the toes, except the hallux, are united to the end of the first phalanx by a fold of skin. The Subfamily has but three genera, INDRIS with one species, the largest of all the Lemurs, distinguished by absence of tail and excessive variability in the color of pelage; PROPITHECUS with two species and five subspecies. Like INDRIS the species of this genus are subject to much variation in color, and this has been productive of great confusion in discriminating between the different forms. They are large animals, with powerful hind limbs enabling them to leap amazing distances. When walking on the ground they assume an erect posture and, like the Gibbons, balance themselves by holding the arms over their heads. The last genus is LICHANOTUS with one species. It is a small animal with a rather long tail, and woolly fur. It is slow in its movements but when on the ground like the other members of INDRISINÆ it walks upright.

The second Suborder ANTHROPOIDEA contains the remainder of the Primates, including Man. As the consideration of Homo is excluded in this REVIEW, we pass to the Monkeys, Baboons, Apes, etc., which compose the rest of the Suborder. The Monkeys of the New World and those of the Old, save in one Family, CALLITRICHIDÆ, are separated by two characters, the number of teeth, and more or less prehensile tails. They are all contained in two Families, the one just mentioned above, and CEBIDÆ. The first contains the smaller, less intelligent species, delicate of frame and constitution, unable to bear captivity, and soon succumb when taken from their accustomed environment. CALLITRICHIDÆ contains six genera with about sixty species and subspecies. The members of this Family have only thirty-two teeth and in this respect resemble the species of the Old World. and differ from the rest of the Monkeys indigenous to the western hemisphere. The first genus is SENIOCEBUS with three species, with the head partly bald, and long occipital crest, and without a mane or ruff; next CERCOPITHECUS with three species having a mantle; then LEONTOCEBUS having nineteen species, possessing a ruff on neck, and fourth, ŒDIPOMIDAS with three species having the head crested and the hairs on the nape elongate. The fifth genus is CALLITHRIX with thirteen species. These are small creatures, among the most delicate of all the members of the Order, have small canines, tails with long hair, and the angle of the mandible expanded as in PITHECIA. CALLICEBUS the sixth genus has twenty-two species, closely allied to the previous genus, and agreeing with it in certain of its characteristics.

We now come to Monkeys that are distinctively American with one pair of extra premolars in both jaws, the nostrils directed outward, and the prehensile tail. They are all included in the Family CEBIDÆ with its four Subfamilies. The first of these is ALOUATTINÆ having but one genus ALOUATTA with eleven species, and two subspecies, some of them being the largest in size of the New World Monkeys. They are of low intelligence, morose in disposition, heavy in body and with a wonderfully powerful voice. The second Subfamily, PITHECINÆ, containing the Sakis, Uakari and Squirrel Monkeys, has three genera the first of which is PITHECIA with eight species. These are animals of moderate size, of a more slender figure than the species of ALOUATTA, with the hair on head, frequently standing upright, long and thick and with a median part. A thick beard hangs from the chin, especially noticeable in the male, and there is also a lengthened bushy tail. In certain species the hair of head is coarse, loosely set, and is directed forward forming a kind of hood around the face. The second genus is CACAJAO with only three species characterized by having the face and a large portion of the head naked and brightly colored, becoming more intense and vivid when the animal becomes excited. The tail is very short and the mandible is dilated posteriorly. The *"cæcum in C. CALVUS is upwards of ten inches along the greater curvature; it is separated from the colon by a very marked constriction;

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*Beddard, Proc. Zool. Soc. Lond., 1887, p. 119.

it is not sacculated, and when fully distended with air is curved on itself into little less than a circle; it is furnished with a well developed median frenum carrying blood vessels."

The last genus is SAIMIRI having eight species. These are small active animals with large eyes, and the occipital region of the skull projected posteriorly.

The third Subfamily is AOTINÆ with a single genus AOTUS containing fourteen species. These are eminently nocturnal animals, of small size, and with large eyes placed close together. The fourth Subfamily is CEBINÆ with four genera; the first ATELEUS, generally known as 'Spider Monkeys,' on account of their slender bodies and long limbs, with twelve species. The pollux is usually absent, and the tail prehensile, the animals of this genus being so expert in the use of this organ as to make it perform the service of an extra hand. The next genus is BRACHYTELEUS with only one species; a long limbed, heavy bodied creature, with, like ATELEUS, the thumb usually wanting. It is closely allied to the 'Spider Monkeys.' The third genus is LAGOTHRIX having six species. Unlike the members of the two previous genera, the species of this one have a well developed thumb. The body is heavy, the round head covered thickly with short hairs, and best described as 'bullet-headed.' The animals are slow in movement, of a gentle disposition, and a delicate constitution. The fourth genus being the last of the American Monkeys is CEBUS with twenty-two species and two subspecies. On account of the great variability in the coloring assumed by individuals, the members of this genus are the most difficult to determine of the Primates. They also, by certain of the species, are most generally known of all Monkeys. The face is flat, the muzzle not protruding. The brain has numerous convolutions, and the animals are intelligent, vivacious and very mischievous.

The Apes, Baboons and Monkeys of the Old World comprise the CRATARRHINE section of the Primates, or those with, among other characters, the nostrils directed downward. There are only three Families and two Subfamilies possessing, altogether, twenty-two genera. The first Family is LASIOPYGIDÆ with eleven genera. PAPIO, the first genus, has nineteen species including the dog-faced baboons, so called on account of their long muzzle. These are large, powerful animals, associating in herds, commanded by one or more patriarchal members, and are formidable antagonists when attacked. THEROPITHECUS contains but two species, large in size and heavily maned, in this respect allies of PAPIO HAMADRYAS. The third genus is CYNOPITHECUS the black Apes of Celebes; peculiar looking animals without tails, and very broad rostrum, and the head crested. They are not very closely allied to any of the species of the Primates, but are as well placed here as anywhere, for, although there are many characters to separate them, yet they are probably nearer the species of the genus MAGUS than any other. One species only is here recognized. MAGUS with three species serves as a link connecting CYNOPITHECUS and PITHECUS. While outwardly resembling the black Ape of Celebes, yet its narrower rostrum, lack of crest on head, which is covered with short hairs, indicate an affinity for the Macaques, and its tailless condition is similar to that of SIMIA SYLVANUS, the only species of that genus. PITHECUS is one of the largest genera of the Primates having fifty-three recognized species and subspecies. These vary greatly in appearance, with tails either short and thick, or slender and longer than the head and body. The Macaques are noted for their nude buttocks which are often most highly colored, eyes close together and surmounted by a bony ridge which gives them a scowling expression. The canines are long and make formidable weapons, and the brain is small. The seventh genus is CERCOCEBUS. It has nine species and two subspecies, of a more slender form than the Macaques and with shorter rostrum and longer limbs, but as in PITHECUS the last lower molar has five cusps. Much confusion has existed in the synonymy which, it is hoped, has at length been corrected. RHINOSTIGMA is the next genus, with one species, allied to both the members of CERCOCEBUS and LASIOPYGA, and forming a link between them. This last named genus is the largest of all and has eighty-five species and subspecies. These monkeys have frequently a pelage of many brilliant colors, have slender bodies and long limbs and tails, and are very active in their movements. The ninth genus is MIOPITHECUS containing only two species of small stature and inconspicuous coloring. ERYTHROCEBUS the last genus of the Subfamily, had, at one time, its members, like those of the one preceding, included in LASIOPYGA; they, however, differ in many ways from the Langurs, have longer legs, differently shaped skulls, and dwell upon the ground, being frequenters of the plains rather than of the forests, and go in small companies. Twelve species are recognized.

The second Subfamily is COLOBINÆ, frequently named *Semnopithecinæ* with five genera. The first, PYGATHRIX, has fifty-eight species and subspecies. They are delicate animals, and feed chiefly on leaves and shoots. Their forms are slender and they have no cheek pouches, and their pelage is much less gaily colored than that of the species of LASIOPYGA. The Langurs, as they are called, are rarely seen in Zoological Gardens as their delicate constitutions cause them easily to succumb when held in captivity.

RHINOPITHECUS is the second genus with three species, large animals with the nasal portion of the face depressed, the nose very small and the end turned upward giving a very bizarre expression to the countenance. One species has bright colors, ROXELLANÆ, the others are garbed in more sober hues, but their size makes them imposing, and to rank among the finest species of the Primates in the Family to which they belong. The next genus SIMIAS contains but one species, a curious creature apparently, a connecting link between RHINOPITHECUS and NASALIS as it possesses characters peculiar to each. Thus, it has the upturned nose of the members of the first genus, and also similar teeth, with cranial characters resembling those of the Proboscis monkey. It is altogether, considering the above mentioned peculiarities and its short naked tail with the terminal tuft, not comparable with any species of the Order; a very remarkable animal.

NASALIS is the fourth genus with an equally extraordinary species, its greatly lengthened nose turned downward. This organ has a depression in the center and is capable of being dilated. The laryngeal sac is large, and there is a beard on the chin. There is but one species known. The last genus of the Family is COLOBUS containing the Guerezas of which there are thirty species, composed of the red and black Guerezas, the former constituting about two thirds the entire number. These animals have the thumb absent or rudimentary. They are large in size, and the black Guerezas are ornamented on different parts of the body, with long white hairs falling like a fringe, and the tails are more or less tufted with white. The fourth Family is HYLOBATIDÆ containing the Gibbons, with two genera, HYLOBATES with twelve species, and SYMPHALANGUS with one species and two subspecies, one of which, *continentis* is somewhat doubtful. These flying Apes are, among other characters, remarkable for the length of their arms, which, when the animal is erect, permit the hands to reach the ground. They walk erect, balancing themselves somewhat awkwardly by holding the arms, crooked at the elbow, over the head. The ischial callosities are small and they are the last of the large Ape-like species to possess them. The species and subspecies of SYMPHALANGUS are the largest in size, and differ from those of HYLOBATES in having the second and third toes united by skin up to their last joint, and the skin of the throat is distensible and overlies the laryngeal sac by the thyro-hyoid membrane.

The last Family is that of PONGIIDÆ containing the great Apes, represented by three genera, arranged according as their species are considered nearest to Man. In this REVIEW the Ourang-utan is placed lowest in the scale or farthest from Man; and the genus PONGO is considered to possess but one species certainly, and one very doubtful. The Author is fully aware that this opinion is by no means shared by some of his colleagues, who would recognize a large number of species, but after examining all the material of Ourangs contained in all the large Museums of the world, the writer was able to discover no character that would prove the existence of more than one species. The opinions as to the position the Ourang should occupy in reference to Man have varied greatly yet despite the views of so great an authority as that of his friend the late Sir Richard Owen, who would place the Ourang before the Gorilla in its relation to Man, the Author, from the result of his own studies, and the evidence produced by others, considers that the testimony in its entirety shows that the Gorilla, low as he may be in the scale of intelligence, has more of an affinity for Man than the Ourang, while both are far exceeded in man-like qualities by the Chimpanzee. The second genus then is GORILLA with certainly two species, and seven subspecies of more or less distinctive value. PSEUDOGORILLA has one species, connecting Gorilla and Pan. The last genus is *Pan*, containing the Chimpanzees, nearest in the scale to Man of all existing earth born creatures. There are at present eleven scheduled species and three not yet named, but how many of these will eventually be able to prove their right to be regarded as distinct species cannot as yet be determined.

GENERA.

The genera bestowed upon the Primates have been many and of varied importance. Some of course are necessary in order to properly recognize natural divisions of a Family; a few are useful to segregate, as subgeneric groups, certain portions of a genus which seem to have in common, characters not possessed by other species of the same genus; but a considerable number of the proposed terms find no legitimate place, and only help to swell the list of synonyms. In the following arrangement the genera proposed are placed in the various Families to which they belong according to the year in which they were first published, beginning with Linnæus in 1758, earlier than whom no Author may be recognized.

LEMUROIDEA.

1758. Lemur Linnæus, Syst. Natur., pp. 29, 30. Type *Lemur catta* Linnæus.

1762. Prosimia Brisson, Regn. Anim., pp. 13, 156-158. Type *Lemur catta* Linnæus.

1780. Procebus Storr, Prodr. Method. Mamm., pp. 32, 33. Type *Lemur catta* Linnæus.

Tarsius Storr, Prodr. Meth. Mamm., pp. 33, 34. Type *Lemur tarsius* Erxleben, undeterminable.

1784. Tardigradus Bodd., (nec Briss.), Elench. Anim., pp. 43-47. Type *Lemur tardigradus* Linnæus.

1795. Bradicebus Cuv. et Geoff., Mag. Encyclopéd., No. 6, (Palmer). Not in this list. No. 6 is Papio.

Daubentonia E. Geoff., Décad. Philos. et Litt., p. 195. Type *Sciurus madagascariensis* Gmelin.

Scolecophagus E. Geoff., Décad. Philos. et Litt., p. 196. Type *Sciurus madagascariensis* Gmelin.

Pavianus Frisch, Nat. Syst. vierfüss Thiere in Tabellen, p. 19, 1775. Type *"Der Pavian."*

1796. Indri (!) E. Geoff., Mag. Encyclopéd., Paris, I, p. 46. Type *Lemur indri* (!) Gmelin.

Loris E. Geoff., Mag. Encyclopéd., Paris, I, p. 48. Type *Loris gracilis*? E. Geoffroy.

Galago E. Geoff., Mag. Encyclopéd., Paris, I, p. 49. Type Galago senegalensis E. Geoffroy.

1799. Aye-Aye Lacépèd., Tabl. Mamm., p. 6. Type *Sciurus madagascariensis* Gmelin.

1800. Cheiromys (*Chiromys*) G. Cuv., Leçons Anat. Comp., I, Tabl. 1. Type *Sciurus madagascariensis* Gmelin.

1806. Catta Link, Beschreib. Nat. Samm. Univers. Bostock, I, pp. 7, 8. Type *Catta mococo* Link, = *Lemur catta* Linnæus.

1811. Lichanotus Illig., Prodr. Syst. Mamm. Av., p. 72. Type *Lemur laniger* Gmelin.

Stenops Illig., Prodr. Syst. Mamm. Av., p. 73. Type *Lemur* tardigradus Linnæus.

Otolicnus Illig., Prodr. Syst. Mamm. Av., p. 74. Type *Lemur galago* Schreber!, not mentioned by that Author.

Macropus Fisch., Mém. Imp. Soc. Mosc., Zoogn., II, p. 566. New name for Galago.

1812. CHEIROGALEUS (!) E. Geoff., Ann. Mus. Hist. Nat Paris, XIX, p. 172, pl. X. Type *Cheirogaleus* (!) *major* E. Geoffroy.

NYCTICEBUS E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, p. 163. Type *Nycticebus bengalensis* E. Geoff., = *Tardigradus coucang* Boddært.

1815. INDRIUM Rafin., Analys. Nat., p. 54. New name for *Indri.* Type *Lemur indri* Gmelin.

LORIDIUM Rafin., Analys. Nat., p. 54. New name for *Loris.* Type none given.

1816. PSILODACTYLUS Oken, Lehrb. Natur., 3te Theil, Zool., 2te Abth., pp. 116-165. Type *Sciurus madagascariensis* Gmelin.

1819. MAKI Muirhead, Brewst., Edinb. Encycloped., XIII p. 405. Type *Lemur macaco* Linnæus?

1821. RABIENUS Gray, Lond. Med. Repos., XV, p. 299. Type *Lemur spectrum* Pallas. Undeterminable.

1828. MICROCEBUS E. Geoff., Cours Hist. Nat. Mamm., 11me Leçon. Type *Lemur pusillus* E. Geoffroy, = *Microcebus murinus* (Miller).

1831. PERODICTICUS Bennett, Proc. Zool. Soc. Lond., p. 109. Type *Perodicticus geoffroyi* Bennett, = *Nycticebus potto* Geoffroy.

1832. PROPITHECUS Bennett, Proc. Zool. Soc. Lond., p. 20. Type *Propithecus diadema* Bennett.

1833. GALAGOIDES A. Smith, S. Afr. Quart. Journ., 2nd Ser., II, p. 32. Type *Galago demidoffi* A. Smith.

MACROTARSUS Link, Beytr. Naturg., I, Pt. II, pp. 51, 65, 66. Type *Macrotarsus buffoni* = *Tarsius* ——— ?

MYSPITHECUS Cuv., Hist. Nat. Mamm., Livr. XXXII, pl. Type *Myspithecus typus* A. Smith, = *Cheirogaleus* (!) *major* E. Geoffroy.

1834. AVAHI Jourd., L'Institut., II, p. 231. Type *Lemur laniger* Gmelin.

Microrhynchus Jourd., Thèse inaug. à la Faculté de Science de Grenoble. Type *Lemur laniger* Gmelin.

1835. CEPHALOPACHUS Swains., Nat. Hist. and Class. Quad., p. 352. Type *Tarsius bancanus* Horsfield.

SCARTES Swains., Nat. Hist. and Class. Quad., p. 352. Type *Lemur murinus* Miller.

1839. HABROCEBUS Wagn., Schreb., Säugth. Suppl., I, pp. IX, V bis, 257, tab. XLII. Type *Lemur lanatus* Schreb., = *Lemur laniger* Gmelin.

Myspithecus nec Cuv., Blainv., Ostéog., I, p. 33. New name for Chiromys Lacépède, 1799.

Bradylemur Blainv., Ostéog., p. 239. Type *Lemur tardigradus* Blainv., = *Nycticebus coucang* Boddært.

1840. Arachnocebus Less., Spec. Mamm., pp. 207, 243. Type *Nycticebus lori* Fischer, = *Lemur tardigradus* Linnæus.

Cebugale Less., Spec. Mamm., pp. 207, 213. Type *Lemur commersoni* Wolf, = *Cheirogaleus* (!) *major* E. Geoffroy.

Gliscebus Less., Spec. Mamm., pp. 207, 216. Type *Lemur murinus* Miller.

Myoxicebus Less., Spec. Mamm., pp. 207, 218. Type *Mioxicebus* (!) *griseus* (Less.), = *Lemur griseus* E. Geoffroy.

Myscebus Less., Spec. Mamm., pp. 207, 214. Type *Myscebus palmarum* Less., = *Lemur murinus* Miller.

Pithelemur Less., Spec. Mamm., pp. 207, 208. Type *Lemur indri* Gmelin.

Potto Less., Spec. Mamm., pp. 207, 237. Type *Potto bosmani* Less., = *Perodicticus potto* E. Geoffroy.

Hypsicebus Less., Spec. Mamm., pp. 207, 253. Type *Tarsius bancanus* Horsfield.

Semnocebus Less., Spec. Mamm., pp. 207, 209. Type *Lemur laniger* Gmelin.

1841. Iropocus Gloger, Hand. u. Hilfsb. Nat., I, pp. XXVIII, 43. Type *Iropocus laniger*, = *Lemur laniger* Gmelin.

Myslemur Blainv., Dict. Univ. Hist. Nat., Paris, VIII, p. 559. New name for *Myspithecus* Blainville.

1851. Hapalemur (!) I. Geoff., L'Instit., 19me Ann., p. 341. (footnote). Type *Lemur griseus* E. Geoffroy.

Lepilemur (!) I. Geoff., L'Instit., 19me Ann., p. 341, (footnote). Type *Lepilemur* (!) *mustelinus* I. Geoffroy.

1855. Galeocebus Wagn., Schreb., Säugth. Suppl., V, pp. XII, 147. Type *Lepilemur* (!) *mustelinus* I. Geoffroy.

1857. Hemigalago Dahlb., Zool. Stud., I, Tredje Haftet, p. 224. Type *Galago demidoffi* Fischer.

1859. Otolemur Coquerel, Rev. Mag. Zool., 2me Sér., XI, p. 458. Type *Otolemur agisymbanus* Coq., = *Galago crassicaudatus* E. Geoffroy.

1865. Varecia Gray, Proc. Zool. Soc. Lond., p. 135. Type *Lemur varius* E. Geoffroy, = *Lemur variegatus* Kerr.

Otogale Gray, Proc. Zool. Soc. Lond., p. 139. Type *Otolicnus garnetti* Ogilby.

EUOTICUS Gray, Proc. Zool. Soc. Lond., p. 140. Type *Otogale pallida* Gray.

CALLOTUS Gray, Proc. Zool. Soc. Lond., p. 145. Type *Galago monteiri* Bartlett.

ARCTOCEBUS Gray, Proc. Zool. Soc. Lond., p. 150. Type *Perodicticus calabarensis* Smith.

1868. ANDROPITHECUS Cope, Proc. Acad. Nat. Scien. Phil., p. 286. Nomen nudum.

1870. AZEMA Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., pp. 132, 134. Type *Chirogaleus* (!) *smithi* Gray, = *Microcebus murinus* (Miller).

PROLEMUR Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., p. 135. Type *Hapalemur* (!) *simus* Gray.

MURILEMUR Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., p. 134. Type *Lemur murinus* Miller.

MIRZA Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., p. 135. Type *Microcebus coquereli* Schlegel and Pollen.

PHANER Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., p. 135. Type *Lemur furcifer* Blainville.

1872. OPOLEMUR Gray, Proc. Zool. Soc. Lond., p. 853, fig. I, pl. LXX. Type *Cheirogaleus* (!) *milii* E. Geoff., = *Cheirogaleus* (!) *major* E. Geoffroy.

SCIUROCHEIRUS Gray, Proc. Zool. Soc. Lond., p. 857, fig. 5. Type *Galago alleni* Waterhouse.

1874. MIXOCEBUS Peters, Monatsb. K. Preus. Akad. Wiss. Berlin, p. 690. Type *Mixocebus caniceps* Peters.

1878. Mococo Trouess., Rev. Mag. Zool., VI, 3me Sér., No. 6, p. 163, as synonym of *Lemur*.

1911. ALTILILEMUR D. G. Elliot, Rev. Primates, p. 111. Type *Cheirogaleus* (!) *medius* E. Geoffroy.

ANTHROPOIDEA.

1758. SIMIA Linnæus, Syst. Nat., 10th ed., I, p. 25. Type *Simia sylvanus* Linnæus.

1763. CERCOPITHECUS Gronov., Zooph., I, p. 5. Type *Simia midas* Linnæus.

1775. Pavianus Frisch, Das Nat. Syst. vierp. Thiere in Tabellen, p. 19. Type ——— ? *"Der Pavian."*

Papio Frisch, Das Nat. Syst. vierp. Thiere in Tabellen, p. 19. Type ——— ? *"Der Pavian."*

1777. Papio Erxl., Syst. Reg. Anim., p. 15. Type *Papio sphinx* Erxleben, = *Cynocephalus papio* Desmarest.

Cercopithecus Erxl., (nec Gronov.), Syst. Reg. Anim., p. 22. Type *Simia mona* Schreber.

Cebus Erxleb., Syst. Reg. Anim., p. 44. Type *Simia capucina* Linnæus.

Callithrix Erxl., Syst. Reg. Anim., p. 55. Type *Simia jacchus* Linnæus.

1779. Cercopithecus (nec. Gronov.), Blumenb., Handb. Naturg., I, p. 68. Two species *Simia paniscus* type of Ateleus, and *S. jacchus* type of Callithrix.

1792. Sapajus Kerr, Anim. Kingd., Mamm., I, p. 74. Type none indicated.

Sagoinus Kerr, Anim. Kingd., Mamm., I, p. 80. Type none indicated.

1795. Cynocephalus Cuv. et E. Geoff., Mag. Encyclopéd., III, p. 458, Genus VI. Type *Simia cynocephalus* Linnæus.

Pithecus Cuv. et E. Geoff., Mag. Encyclopéd., III, p. 462, Genus IV. Type *Simia sinica* Linnæus.

1799. Pongo Lacépèd., Tabl. Mamm., p. 4. Type *Pongo borneo* Lacépède, = *Simia pygmæa* Hoppius.

Sagouin Lacépèd., Tabl. Mamm., p. 4. Type *Simia jacchus* Linnæus.

Alouatta Lacépèd., Tabl. Mamm., p. 4. Type *Simia beelzebul* Linnæus.

Macaca Lacépèd., Tabl. Mamm., p. 4. Type *Simia inuus* Linnæus.

1804. Pithecia Desmar., Nouv. Dict. Hist. Nat., XXIV, p. 8. Type *Simia pithecia* Linnæus.

1806. Ateles (!) E. Geoff., Ann. Mus. Hist. Nat. Paris, XII, p. 262. Type *Simia paniscus* Linnæus.

Atelocheirus E. Geoff., Ann. Mus. Hist. Nat. Paris, VII, p. 272. Type *Simia paniscus* Linnæus.

1811. Lasiopyga Illig., Prodr. Syst. Mamm. et Av., p. 68. Type *Simia nictitans* Linnæus.

1812. Troglodytes E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, p. 87. Type *Simia troglodytes* Linnæus.

NASALIS E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, p. 90. Type *Cercopithecus larvatus* Wurmb.

PYGATHRIX E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, p. 90. Type *Simia nemæus* Linnæus.

INUUS E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, p. 96. Type *Simia sylvanus* Linnæus.

CERCOCEBUS E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, p. 97. Type *Cercocebus fuliginosus* E. Geoffroy, = *Simia æthiops* Schreber.

LAGOTHRIX E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, p. 106. Type *Lagothrix cana* E. Geoffroy.

STENTOR E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, p. 107. Type *Simia seniculus* Linnæus.

JACCHUS E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, p. 118. Type *Simia jacchus* Linnæus.

MIDAS E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, p. 120. Type *Simia midas* Linnæus.

1813. LOPHOTUS G. Fischer, Zoogn., II, pp. IX, 547. Type *Pongo wurmbi* Tiedemann, = *Pongo pygmæus* (Hoppius).

ATELEUS Fischer, Zoogn., II, pp. 529-532. Emendation of *Ateles* E. Geoffroy.

1815. AGIPAN Rafin., Analy. Nat., p. 53. New name for CEBUS Erxleben, 1777.

PANISCUS Rafin., Analy. Nat., p. 53. Type *Simia paniscus* Linnæus.

SAJUS Rafin., Analy. Nat., p. 53. New name for CALLITHRIX Cuv., (Part.).

SYLVANUS Rafin., Analy. Nat., p. 53. New name for CALLITHRIX Cuv., (Part.).

CEBUS (nec Erxl.), Rafin., Analy. Nat., p. 53. New name for CERCOPITHECUS Gronovius.

SAKINUS Rafin., Analy. Nat., p. 219. New name for *Sylvanus* Rafinesque.

1816. SYLVANUS Oken, Lehrb. Naturg., 3ter Theil, Zool., 2te Abth. Type *Inuus ecaudatus* E. Geoff., = *Simia sylvanus* Linnæus.

SATYRUS Oken, Lehrb. Naturg., 3te Theil, Zool., 2te Abth., pp. XI, 1225. Type *Satyrus rufus* Less., = *Simia pygmæa* Hoppius.

FAUNUS Oken, Lehrb. Naturg., 3te Theil, Zool., 2te Abth., pp. XI, 1227. Type *Faunus indicus* = *Simia pygmæa* Hoppius.

Pan Oken, Lehrb. Naturg., 3te Theil, Zool., 2te Abth., pp. XI, 1230. Type *Pan africanus* Oken, = *Simia satyrus* Linnæus.

1819. *Sylvanus* Virey, Nouv. Dict. Hist. Nat., 2nd ed., XXXI, p. 275. Type *Simia sylvanus* Linnæus.

Arctopithecus Virey, Nouv. Dict. Hist. Nat., 2nd ed., XXXI, p. 279. A subgeneric term for *Hapale* Illiger.

1820. Silenus Goldfuss, Handb. Zool., II, p. 479. Type *Cynocephalus silenus* (Schreber), = Pithecus albibarbatus (Kerr).

1821. Homo Gray, Lond. Med. Repos., XV, p. 297. Type *Simia nasica* Schreber, = *Nasalis larvatus* (Wurmb).

Laratus Gray, Lond. Med. Repos., XV, p. 297. Type *Homo lar* Linnæus.

Daunus Gray, Lond. Med. Repos., XV, p. 298. Type *Simia nemæus* Linnæus.

Presbytis Eschscholtz, Kotzeb. Entdeck-Reise Sud See u. nach Berings-Str., III, p. 196. Type *Presbytis mitrata* Esch., = *Simia aygula* Linnæus.

1823. Brachyurus Spix, Sim. Vespert. Bras., p. 11, pl. VII. Type *Brachyurus israelita* ? Spix.

Nyctipithecus Spix, Sim. Vespert. Bras., p. 24, pl. XVIII, XIX. Type *Nyctipithecus felinus* Spix, = *Aotus infulatus* Kuhl.

*Brachyteles (!) Spix, Sim. Vespert. Bras., p. 36, pl. XXVII. Type *Brachyteles* (!) *macrotarsus* Spix, = *Ateles* (!) *arachnoides* E. Geoffroy.

Gastrimargus Spix. Sim. Vespert. Bras., p. 39, pls. XXVIII, XXIX. Type *Gastrimargus infumatus* Spix, = *Lagothrix infumata* (Spix).

1824. Nocthora F. Cuv., Hist. Nat. Mamm., V, Livr. XLIII, pl. Type *Simia trivirgata* Humboldt.

Magotus Ritgen, Nat. Entheil, Säugth., p. 33. Type ——— ? none specified.

Mandrillus Ritgen, Nat. Entheil, Säugth., p. 33. Type ——— ? none specified.

1825. Semnopithecus F. Cuv., Hist. Nat. Mamm., III, Livr. XXX, pl. Type *Simia melalophus* (!) Raffles.

1827. Magus Less., Man. Mamm., p. 43. Type *Magus maurus* F. Cuvier.

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*See page 49, footnote.

1828. THERANTHROPUS Brookes, Cat. Anat. and Zool. Mus. of Joshua Brookes, Lond., p. 28. Type *Troglodytes niger* E. Geoffroy, = *Simia satyrus* Linnæus.

CHEIRON Burnett, Quart. Journ. Sci. Litt. and Art, XXVI, p. 307. Type *Homo lar* Linnæus.

OUISTITIS Burnett, Quart. Journ. Sci. Litt. and Art, XXVI, p. 307. Type *Simia jacchus* Linnæus.

PITHES (!) Burnett, Quart. Journ. Sci. Litt. and Art, XXVI, p. 307. Type *Simia sylvanus* Linnæus.

MACROBATES Billb., Faun. Scandin., I, Mamm., Consp. A. New name for PONGO.

CLÆTES Billb., Faun. Scandin., I, Mamm., Consp. A. Type *Simia apella*? Linnæus.

1829. GEOPITHECUS Less., Dict. Class. Hist. Nat., XV, p. 52. Type none given.

ERIODES I. Geoff., Dict. Class. Hist. Nat., XV, p. 143. Type *Eriodes arachnoides* I. Geoffroy.

1831. MANDRIL Voigt, Cuv. Das Thierreich, I, p. 88. Type *Simia sphinx* Linnæus, (nec Auct.).

SAIMIRI Voigt, Cuv. Das Thierreich, I, p. 95. Type *Simia sciurea* Linnæus.

1835. CHRYSOTHRIX Kaup, Das Thierreich, I, p. 50, fig. text. Type *Simia sciurea* Linnæus.

CYNOPITHECUS I. Geoff., Bélang., Voy. Ind. Orient., Zool., p. 66. Type *Cynocephalus niger* Desmarest.

1838. ANTHROPOPITHECUS Blainv., Ann. Franç. et Étrang. d'Anat. et Physiol., Paris, II, p. 330. Type *Simia troglodytes* Gmelin, = *Simia satyrus* Linnæus.

1839. BRACHIOPITHECUS Sénéch., Dict. Pitt. Hist. Nat., 2nd Pt., p. 428. Type none given.

MAIMON Wagn., Schreb., Säugth. Suppl., pp. IV bis, 141. Type none given.

LEONTOCEBUS Wagn., Schreb., Säugth. Suppl., I, pp. IX, V bis. Type *Hapale chrysomelas* Kuhl.

LIOCEPHALUS Wagn., Schreb., Säugth. Suppl., I, pp. IX, V bis. Type *Jacchus melanurus* Geoff., = *Simia argentata* Linnæus.

MORMON Wagn., Schreb., Säugth. Suppl., I, pp. 164-168. Type *Simia mormon* Alströmer, = *Simia sphinx* Linnæus.

CHÆROPITHECUS Blainv., "Leçons Orales." Type *"Les Cynocephales."*

1840. Rhesus Less., Spec. Mamm., pp. 49, 95. Type *Macacus rhesus* Desmarest.

Hamadryas Less., Spec. Mamm., p. 107. Type *Simia hamadryas* Gmelin?

Pithesciurus (!) Less., Spec. Mamm., pp. 116, 157. Type *Pithesciurus saimiri* Less., = *Simia sciurea* Linnæus.

Yarkea Less., Spec. Mamm., p. 176. Type *Simia leucocephala* Audebert.

Chiropotes Less., Spec. Mamm., p. 178. Type *Chiropotes cuxio* Less., = *Simia satanas* Hoffmannsegg.

Cacajao Less., Spec. Mamm., p. 181. Type *Simia melanocephala* E. Geoffroy.

Mico Less., Spec. Mamm., pp. 184, 192. Type *Simia argentata* Linnæus.

Œdipus Less., Spec. Mamm., pp. 184, 197. Type *Œdipus titi* Less., = *Simia œdipus* Linnæus.

1841. Hylanthropus Glog., Hand. u. Hilfsb. Naturg., I, pp. XXVII, 34. Type *Simia troglodytes* Gmelin, = *Simia satyrus* Linnæus.

Symphalangus Glog., Hand. u. Hilfsb. Naturg., I, pp. XXVII, 34. Type *Pithecus syndactylus* Desmarest.

Salmacis Glog., Hand. u. Hilfsb. Naturg., I, pp. XXVII, 35. Type none given. New name for *Macaca* Lacépède.

Rhinalazon Glog., Handb. u. Hilfsb. Naturg., I, pp. XXVII, 36. Type *Nasalis larvatus* Wurmb.

Œthiops Martin, Gen. Intro. Nat. Hist. Mamm. Anim., p. 506. Type none given.

Mandrillus (nec Ritgen), Milne-Edw., Kruger's Handb. Zool. nach 2ten Franz. Ausg., I. Type *Cynocephalus porcarius* Boddært.

Pithex Hodg., Journ. Asiat. Soc. Beng., IX, Pt. II, p. 1212. Type *Macacus oinops* Hodg., = *Pithecus rhesus* (Audebert).

1842. Syndactylus Boit., Jard. Plantes, p. 55. Type *Pithecus syndactylus* Desmarest.

Miopithecus I. Geoff., Compt. Rend., Paris, XV, p. 720. Type *Cercopithecus talapoin* Erxleben.

1843. Siamanga Gray, List Spec. Mamm. Brit. Mus., p. 1. Type *Pithecus syndactylus* Desmarest.

Theropithecus I. Geoff., Archiv. Mus. Hist. Nat., Paris, II, p. 576. Type *Macaca gelada* Rüppell.

Gelada Gray, List Spec. Mamm. Brit. Mus., p. 103. Type *Macacus gelada* Rüppell.

SPHINX Gray, List Spec. Mamm. Brit. Mus., p. XVII. Type none given.

1848. LYSSODES Gistel, Naturg. Thierreich f. höhere Schulen, p. IX. Type *Macacus speciosus* F. Cuvier.

1849. OUAKARIA Gray, Proc. Zool. Soc. Lond., p. 9, fig. Type *Brachyurus ouakary* Spix.

1852. GORILLA I. Geoff., Compt. Rend., Paris, XXXIV, p. 84. Type *Troglodytes gorilla* Savage.

1857. RHYNCHOPITHECUS Dahlb., Zool. Stud., I, Andra Haftet, pp. 83, 91. New name for NASALIS.

1860. PSEUDANTHROPUS Reichenb., Fortsetz. Vollständ. Naturg. New name for *Troglodytes* E. Geoffroy, 1812.

1862. ŒDIPOMIDAS Reichenb., Vollständ. Naturg. Affen, p. 5, pl. II, figs. 18-20. Type *Simia œdipus* Linnæus.

MARIKINA Reichenb., Vollständ. Naturg. Affen, p. 7, pl. II, figs. 25-31. Type *Simia rosalia*? Linnæus.

OTOCEBUS Reichenb., Vollständ. Naturg. Affen, p. 55, pls. VII, VIII, figs. 124, 126-135. No type declared. Subgenus of CEBUS.

PSEUDOCEBUS Reichenb., Vollständ. Naturg. Affen, p. 55, pls. VI, VII, figs. 83, 84, 89, 90, 108. No type declared. Subgenus of CEBUS.

EUCEBUS Reichenb., Vollständ. Naturg. Affen, p. 56, pls. VI, VII, figs. 86-88, 91, 92, 110, 111, 113, 115. No type declared. Subgenus of CEBUS.

CALYPTROCEBUS Reichenb., Vollständ. Naturg. Affen, p. 55, pls. VI, VII, figs. 85, 93-107, 109, 114, 116-122. Subgenus of CEBUS.

KASI Reichenb., Vollständ. Naturg. Affen, pp. 101, 103, pl. XVII, figs. 234, 235; 240, 241. No type declared. Subgenus of PYGATHRIX.

DIADEMIA Reichenb., Vollständ. Naturg. Affen, pp. 107-109, pls. XVIII, XIX, figs. 262-270. Subgenus of LASIOPYGA.

MONA Reichenb., Vollständ. Naturg. Affen, pp. 109-113, pls. XIX, XX, figs. 271-282. Subgenus of LASIOPYGA.

VETULUS Reichenb., Vollständ. Naturg. Affen, p. 125, pl. XXII, fig. 321. Type SIMIA SILENUS? Gmel., = PITHECUS ALBIBARBATUS (Kerr).

CYNAMOLGOS Reichenb., Vollständ. Naturg. Affen, p. 130. No type declared.

Zati Reichenb., Vollständ. Naturg. Affen, pp. 130-133, pl. XXIII, figs. 327-331. Type *Simia sinica* Linnæus.

Nemestrina Reichenb., Vollständ. Naturg. Affen, pp. 130-140, pl. XXIV, figs. 349-353, 359-363. Type *Simia nemestrinus* Linnæus.

Petaurista Reichenb., Vollständ. Naturg. Affen, pp. 105-107, pl. XVIII, figs. 251-261. Type *Cercopithecus petaurista* Schreber.

Drill. Reichenb., Vollständ. Naturg. Affen, p. 162. Type *Simia leucophæa* F. Cuvier.

Trachypithecus Reichenb., Vollständ. Naturg. Affen. No type declared. Subgenus of Pygathrix.

1865. Cebuella Gray, Proc. Zool. Soc. Lond., p. 734. Type *Hapale pygmæa* Spix.

1866. Engeco Haeckel, Gen. Morph. Organ., II, CIX, footnote. Type *Simia troglodytes* Gmelin, = *Simia satyrus* Linnæus.

Gymnopyga Gray, Proc. Zool. Soc. Lond., p. 202. Type *Macacus inornatus* Gray, = *Macacus maurus* F. Cuvier.

1870. Chlorocebus Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., pp. 5, 24. Type *Simia pygerythra* F. Cuvier.

Guereza Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., pp. 5, 19. Type *Colobus guereza* Rüppell.

Chæropithecus Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., pp. 5, 35. Type *Simia leucophæa* F. Cuvier.

Entellus Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., p. 14. Type *Semnopithecus johnii* (Fischer).

Cynocebus Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., p. 26. Type *Cercopithecus cynosurus* Geoffroy.

Semnocebus (nec Less.), Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., p. 27. Type *Pygathrix albigena* (Gray).

Hapanella Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., p. 65. Type *Hapale geoffroyi* Pucheran.

Mystax Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., p. 66. Type *Midas mystax* Spix.

Tamarin Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., p. 68. Type *Midas ursulus* Geoffroy.

Seniocebus Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., p. 68. Type *Midas bicolor* Spix.

Micoella Gray, Cat. Monk. Lem. F-eat. Bats, Brit. Mus., p. 130. *Type Mico sericeus* Gray, = *Callithrix chrysoleuca* Wagner.

1872. Rhinopithecus A. Milne-Ed., Recher. Mamm., p. 233, pls. XXXVI, XXXVII. Type *Semnopithecus roxellanæ* A. Milne-Edwards.

1878. Lophopithecus Trouess., Rev. Mag. Zool., VI, 3me Sér., p. 53. Type *Simia melanolopha* Raffles.
Diana Trouess., Rev. Mag. Zool., VI, 3me Sér., p. 124. Type *Simia diana* Linnæus.
Brachyurus (nec Fisch., Rodentia), Trouess., Rev. Mag. Zool., VI, 3me Sér., p. 135. Type *Brachyurus calvus* I. Geoffroy.

1879. Presbypithecus Trouess., Rev. Mag. Zool., VII, 3me Sér., pp. 52, 56. Type *Simia cephaloptera* (!) Zimmermann.
Corypithecus Trouess., Rev. Mag. Zool., VII, 3me Sér., p. 53. Type *Semnopithecus frontatus* Müller.

1886. Procolobus Rochebr., Faun. Sénégamb., Suppl. Vert., fasc. I, p. 95. Type *Colobus verus* Van Beneden.
Tropicolobus Rochebr., Faun. Sénégamb., Suppl. Vert., fasc. I, p. 102. Type *Colobus rufomitratus* Peters.
Piliocolobus Rochebr., Faun. Sénégamb., Suppl. Vert., fasc. I, p. 105. Type *Colobus ferrugineus* Illiger.
Stachycolobus Rochebr., Faun. Sénégamb., Suppl. Vert., fasc. I, p. 114. Type *Colobus satanas* Waterhouse.
Pterycolobus Rochebr., Faun. Sénégamb., Suppl. Vert., fasc. I, p. 125. Type *Colobus vellerosus* I. Geoffroy.

1891. Uacaria Flow. and Lydekk., Mamm. Living and Extinct, p. 712. Type *Brachyurus ouakary* Spix.

1895. Lophocolobus Pousarg., Rev. Mag. Zool., p. 53. Type *Colobus verus* Van Beneden.

1897. Rhinostictus Trouess., Cat. Mamm. Viv. et Foss., I, p. 17. Type *Cercopithecus petaurista* Schreber.
Erythrocebus Trouess., Cat. Mamm. Viv. et Foss., I, p. 19. Type *Simia patas* (?) Schreber. No type designated.
Otopithecus Trouess., Cat. Mamm. Viv. et Foss., I, p. 22. Type *Cercopithecus grayi* Fraser.

1899. Mamatelesus Herrere, Sinon., Vul. y Cient. Prin. Vert. Mex., p. 19. New name for *Ateleus*.
Cothurus (nec Champ. Coleopt.), Palmer, Scien., X, New Ser., p. 403. Type *Brachyurus calvus* Geoffroy.

1903 Callicebus Thos., Ann. Mag. Nat. Hist., 7th Ser., XII, p. 456. Type *Callithrix personatus* Geoffroy.
Neocothurus Palmer, Scien., XVII, New Ser., p. 873. New name for *Cothurus* Palmer.

LOPHOCEBUS Palmer, Scien., XVII, New Ser., p. 873 New name for *Semnocebus* Gray.

SIMIAS Miller, Smith. Misc. Coll., XLIX, p. 66. Type *Simias concolor* Miller.

1912. RHINOSTIGMA D. G. Elliot, Rev. Primates, Vol. II, p. 273. Type *Cercopithecus hamlyni* Pocock.

ALLOCHROCEBUS D. G. Elliot, Rev. Primates, Vol. II, p. 297. Type *Cercopithecus l'hoesti* Sclater. Subgenus of LASIOPYGA.

NEOCEBUS D. G. Elliot, Rev. Primates, Vol. II, p. 319. Type *Simia cephus* Linnæus. Subgenus of LASIOPYGA.

INSIGNICEBUS D. G. Elliot, Rev. Primates, Vol. II, p. 359. Type *Cercopithecus albigularis* Sykes. Subgenus of LASIOPYGA.

PYGATHRIX D. G. Elliot, Rev. Primates, Vol. III, p. 98. Type *P. nemæus* E. Geoff. Subgenus of *Pygathrix*.

PSEUDOGORILLA D. G. Elliot, Rev. Primates, Vol. III, p. 224. Type *Gorilla mayema?* Alix et Bouvier.

The following arrangement is adopted for this work:

ORDER PRIMATES.

SUBORDER I. LEMUROIDEA.

FAMILY I. Daubentoniidæ.

Genus Daubentonia—Aye-Aye.

FAMILY II. Tarsiidæ.

Genus Tarsius—Tarsiers.

FAMILY III. Nycticibidæ.

Subfamily I. Lorisinæ.

Genus I. Loris—Slender Loris.
Genus II. Nycticebus—Slow Loris.
Genus III. Arctocebus—The Amantibo.
Genus IV. Perodicticus—Pottos.

Subfamily II. Galaginæ.

Genus I. Galago—Bush Babys.
Genus II. Hemigalago—Bush Babys.

Subfamily III. Lemurinæ.

Genus I. Chirogale—Mouse Lemurs.
Genus II. Microcebus—Dwarf Lemurs.
Genus III. Mixocebus—The Hattock.
Genus IV. Altililemur—Fat Lemurs.
Genus V. Lepidolemur—Sportive Lemurs.
Genus VI. Myoxicebus—Gentle Lemurs.
Genus VII. Lemur—True Lemurs.

Subfamily IV. Indrisinæ.

Genus I. Lichanotus—Woolly Avahi.
Genus II. Propithecus—Safakas.
Genus III. Indris—The Endrina.

SUBORDER II. ANTHROPOIDEA.

FAMILY I. Callitrichidæ.

Genus I. Seniocebus—Bald-headed Tamarins.
Genus II. Cercopithecus—Black Tamarins.
Genus III. Leontocebus—Tamarins.
Genus IV. Œdipomidas—Marmosets.
Genus V. Callithrix—True Marmosets.
Genus VI. Callicebus—Titi Monkeys.

FAMILY II. Cebidæ.

Subfamily I. Alouattinæ.

Genus Alouatta—Howlers.

Subfamily II. Pithecinæ.

Genus I. Pithecia—Sakis.
Genus II. Cacajao—Uakari.
Genus III. Saimiri—Squirrel Monkeys.

Subfamily III. Aotinæ.

Genus Aotus—Douroucouli.

Subfamily IV. Cebinæ.

Genus I. Ateleus—Spider Monkeys.
Genus II. Brachyteleus—Woolly Spider Monkeys.
Genus III. Lagothrix—Woolly Monkeys.
Genus IV. Cebus—Capuchins.

FAMILY III. Lasiopygidæ.

Subfamily I. Lasiopyginæ.

Genus I. Papio—Baboons.
Genus II. Theropithecus—Geladas.
Genus III. Cynopithecus—Black Apes.
Genus IV. Magus—Celebes Macaques.
Genus V. Simia—Tailless Macaque.
Genus VI. Pithecus—Macaques.
Genus VII. Cercocebus—Mangabeys.
Genus VIII. Rhinostigma—Hamlyn's Monkey.
Genus IX. Lasiopyga—Guenons.
Genus X. Miopithecus—Talapoins.
Genus XI. Erythrocebus—Red Guenons.

Subfamily II. Colobinæ.

Genus I. Pygathrix—Langurs.
Genus II. Rhinopithecus — Retroussé-nosed Monkeys.
Genus III. Simias — Retroussé-nosed Monkeys.
Genus IV. Nasalis—Proboscis Monkey.
Genus V. Colobus—Guerezas.

FAMILY IV. Hylobatidæ.

Genus I. Hylobates—Gibbons.
Genus II. Symphalangus—Gibbons.

FAMILY V. Pongiidæ.

Genus I. Pongo—Ourang-utan.
Genus II. Gorilla—Gorilla.
Genus III. Pseudogorilla—Mayema Ape.
Genus IV. Pan—Chimpanzees

The species that are recognized in this work may be arranged as follows, the subgeneric groups being placed under their respective genera.

ORDER PRIMATES.

SUBORDER I. LEMUROIDEA

Family Daubentoniidæ.

Genus Daubentonia.

Daubentonia E. Geoff., Decad. Philos. et Litt., 1795, p. 195. Type *Sciurus madagascariensis* Gmelin.

Page
1. Daubentonia madagascariensis .... Vol. I, 1

Family Tarsiidæ.

Genus Tarsius.

Tarsius Storr, Prodr. Meth. Mamm., 1780, p. 33, Tab. A. Type *Lemur tarsius* Erxl.

2. Tarsius philippinensis .... Vol. I, 10
3. Tarsius fraterculus .... " I, 12
4. Tarsius sanghirensis .... " I, 12
5. Tarsius saltator .... " I, 13
6. Tarsius borneanus .... " I, 13
7. Tarsius bancanus .... " I, 14
8. Tarsius fuscus .... " I, 15

Family Nycticibidæ.

Subfamily Lorisinæ.

Genus Loris.

Loris E. Geoff., Mag. Encyclopéd., 2me Ann., I, 1796, p. 48. Type *Loris gracilis* E. Geoffroy.

9. Loris tardigradus .... Vol. I, 18
10. Loris lydekkerianus .... " I, 19

Genus Nycticebus.

Nycticebus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 162. Type *Tardigradus coucang* Boddært.

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11. Nycticebus borneanus .... Vol. I, 24
12. Nycticebus bancanus .... " I, 24
13. Nycticebus tenasserimensis .... " I, 25
14. Nycticebus coucang .... " I, 26
15. Nycticebus c. cinereus .... " I, 27
16. Nycticebus javanicus .... " I, 28
17. Nycticebus natunæ .... " I, 29
18. Nycticebus malaianus .... " I, 29
19. Nycticebus hilleri .... " I, 31
20. Nycticebus menagensis .... " I, 32
21. Nycticebus pygmæus .... " I, 33

Genus Arctocebus.

Arctocebus Gray, Proc. Zool. Soc. Lond., 1863, p. 150. Type *Perodicticus calabarensis* Smith.

22. Arctocebus calabarensis .... Vol. I, 35
23. Arctocebus aureus .... " I, 36

Genus Perodicticus.

Perodicticus Bennett, Proc. Zool. Soc. Lond., 1831, p. 109. Type *Nycticebus potto* E. Geoffroy.

24. Perodicticus potto .... Vol. I, 39
25. Perodicticus ju-ju .... " I, 41
26. Perodicticus ibeanus .... " I, 41
27. Perodicticus faustus .... " I, 42
28. Perodicticus edwardsi .... " I, 42

Subfamily Galaginæ.

Genus Galago.

Galago E. Geoff., Mag. Encyclopéd., I, 1796, p. 49. Type *Galago senegalensis* E. Geoffroy.

Subgenus Otolemur.

29. Galago crassicaudatus .... Vol. I, 54
30. Galago zuluensis .... " I, 56

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31. GALAGO PANGANENSIS ....Vol. I, 57
32. GALAGO GARNETTI .... " I, 57
33. GALAGO BADIUS .... " I, 58
34. GALAGO MONTEIRI .... " I, 59
35. GALAGO KIRKI .... " I, 60
36. GALAGO LASIOTIS .... " I, 61
37. GALAGO HINDSI .... " I, 62
38. GALAGO KIKUYUENSIS .... " I, 63

SUBGENUS OTOLICNUS.

39. GALAGO ALLENI ....Vol. I, 63
40. GALAGO A. CAMERONENSIS .... " I, 65
41. GALAGO A. GABONENSIS .... " I, 65
42. GALAGO A. BATESI .... " I, 66
43. GALAGO ZANZIBARICUS .... " I, 67
44. GALAGO TALBOTI .... " I, 67

SUBGENUS OTOGALE.

45. GALAGO GALLARUM ....Vol. I, 68
46. GALAGO BRACCATUS .... " I, 68
47. GALAGO B. ALBIPES .... " I, 69
48. GALAGO DUNNI .... " I, 70
49. GALAGO NYASSÆ .... " I, 70
50. GALAGO GRANTI .... " I, 71
51. GALAGO SENEGALENSIS .... " I, 72
52. GALAGO SENNAARIENSIS .... " I, 74
53. GALAGO MOSAMBICUS .... " I, 76
54. GALAGO PUPULUS .... " I, 76
55. GALAGO ELEGANTULUS .... " I, 77
56. GALAGO E. TONSOR .... " I, 78
57. GALAGO E. PALLIDUS .... " I, 79
58. GALAGO E. APICALIS .... " I, 80

GENUS HEMIGALAGO.

59. HEMIGALAGO DEMIDOFFI ....Vol. I, 82
60. HEMIGALAGO D. POENSIS .... " I, 84
61. HEMIGALAGO ANOMURUS .... " I, 84
62. HEMIGALAGO THOMASI .... " I, 85

Subfamily Lemurinæ.

Genus Chirogale.

Cheirogaleus (!) E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 172, pl. X. Type *Cheirogaleus* (!) *major* E. Geoffroy.

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63.	Chirogale major	Vol. I, 92
64.	Chirogale melanotis	" I, 95
65.	Chirogale sibreei	" I, 95
66.	Chirogale crossleyi	" I, 96
67.	Chirogale trichotis	" I, 96

Genus Microcebus.

Microcebus E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 24, 11me Leçon. Type *Lemur pusillus* E. Geoffroy, = *Lemur pusillus* Miller.

68.	Microcebus murinus	Vol. I, 102
69.	Microcebus myoxinus	" I, 106
70.	Microcebus coquereli	" I, 107
71.	Microcebus furcifer	" I, 108

Genus Mixocebus.

Mixocebus Peters, Monatsb. K. Preuss. Akad. Wiss. Berlin, 1874, p. 690. Type *Mixocebus caniceps* Peters.

72.	Mixocebus caniceps	Vol. I, 110

Genus Altililemur.

Altililemur D. G. Elliot, Rev. Primates, 1912, p. 111. Type *Altililemur medius* (E. Geoffroy).

73.	Altililemur medius	Vol. I, 112
74.	Altililemur thomasi	" I, 113

Genus Lepidolemur.

Lepilemur (sic) I. Geoff., Cat. Meth. Mamm. Mus. Hist. Nat. Paris, 1re Part, 1851, p. 75. Type *Lepilemur* (!) *mustelinus* I. Geoffroy.

75.	Lepidolemur globiceps	Vol. I, 117
76.	Lepidolemur grandidieri	" I, 118
77.	Lepidolemur leucopus	" I, 118

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78. Lepidolemur mustelinus ....Vol. I, 119
79. Lepidolemur microdon .... " I, 121
80. Lepidolemur ruficaudatus .... " I, 122
81. Lepidolemur edwardsi .... " I, 123

Genus Myoxicebus.

Mioxicebus (!) Less., Spec. Mamm., 1840, p. 207. Type *Lemur griseus* E. Geoffroy.

82. Myoxicebus griseus ....Vol. I, 125
83. Myoxicebus olivaceus .... " I, 127
84. Myoxicebus simus .... " I, 128

Genus Lemur.

Lemur Linn., Syst. Nat., I, 1758, p. 59. Type *Lemur catta* Linnæus.

85. Lemur mongos ....Vol. I, 141
86. Lemur coronatus .... " I, 144
87. Lemur nigrifrons .... " I, 145
88. Lemur fulvus .... " I, 147
89. Lemur rufifrons .... " I, 150
90. Lemur rubriventer .... " I, 151
91. Lemur rufus .... " I, 153
92. Lemur albifrons .... " I, 154
93. Lemur cinereiceps .... " I, 156
94. Lemur macaco .... " I, 156
95. Lemur nigerrimus .... " I, 157
96. Lemur catta .... " I, 158
97. Lemur variegatus .... " I, 160
98. Lemur v. ruber .... " I, 162

Subfamily Indrisinæ.

Genus Lichanotus.

Lichanotus Illig., Prodr. Syst. Mamm. et Av., 1811, p. 72. Type *Lemur laniger* Gmelin.

99. Lichanotus laniger ....Vol. I, 163

Genus Propithecus.

Propithecus Bennett, Proc. Zool. Soc. Lond., 1832, p. 20. Type *Propithecus diadema* Bennett.

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100.	Propithecus diadema	Vol. I, 168
101.	Propithecus d. edwardsi	" I, 170
102.	Propithecus d. sericeus	" I, 171
103.	Propithecus verrauxi	" I, 171
104.	Propithecus v. deckeni	" I, 172
105.	Propithecus v. coquereli	" I, 173
106.	Propithecus v. coronatus	" I, 174

Genus Indris.

Indri (sic) E. Geoff., Mag. Encyclop., I, 1796, p. 46. Type *Lemur indri* Gmelin.

107.	Indris indris	Vol. I, 175

SUBORDER ANTHROPOIDEA.

Family Callitrichidæ.

Genus Seniocebus.

Seniocebus Gray, Cat. Monk. Lem. F-Eat. Bats, Brit. Mus., 1870, p. 68. Type *Midas bicolor* Spix.

108.	Seniocebus bicolor	Vol. I, 186
109.	Seniocebus meticulosus	" I, 188
110.	Seniocebus martinsi	" I, 189

Genus Cercopithecus.

Cercopithecus Gronov., Zoophyl., p. 5. Type *Simia midas* Linnæus.

111.	*Cercopithecus midas	Vol. I, 190
112.	Cercopithecus rufimanus	" I, 191
113.	Cercopithecus ursulus	" I, 192

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*See p. 256, Vol. III, Appendix, for *Cercopithecus m. egens* (Thomas).

Genus Leontocebus.

Subgenus Tamarinus.

Leontocebus Wagn., Schreb., Säugth. Suppl., I, 1839, p. IX. Type *Hapale chrysomelas* Wied.

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114.	Leontocebus labiatus	Vol.	I, 195
115.	Leontocebus pileatus	"	I, 197
116.	Leontocebus thomasi	"	I, 198
117.	Leontocebus nigrifrons	"	I, 198
118.	Leontocebus nigricollis	"	I, 199
119.	Leontocebus chrysopygus	"	I, 200
120.	Leontocebus mystax	"	I, 201
121.	Leontocebus weddeli	"	I, 202
122.	Leontocebus devellii	"	I, 203
123.	Leontocebus apiculatus	"	I, 204
124.	Leontocebus illigeri	"	I, 205
125.	Leontocebus tripartitus	"	I, 206
126.	Leontocebus lagonotus	"	I, 206
127.	Leontocebus fuscicollis	"	I, 207
128.	Leontocebus graellsi	"	I, 208
129.	Leontocebus imperator	"	I, 209

Subgenus Marikina.

130.	Leontocebus rosalia	Vol.	I, 209
131.	Leontocebus leoninus	"	I, 210
132.	Leontocebus chrysomelas	"	I, 211

Genus Œdipomidas.

Œdipomidas Reichenb., Vollständ. Naturg. Affen, 1862, p. 5, pl. II, figs. 18-20. Type *Simia œdipus* Linnæus.

133.	Œdipomidas œdipus	Vol.	I, 213
134.	Œdipomidas geoffroyi	"	I, 214
135.	Œdipomidas salaquiensis	Vol.	III, Appendix

Genus Callithrix.

Callithrix Erxl., Syst. Reg. Anim., 1777, p. 55. Type *Simia jacchus* Linnæus.

136.	Callithrix argentata	Vol.	I, 221
137.	Callithrix leucopus	"	I, 222

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138. Callithrix chrysoleuca ....Vol. I, 223
139. Callithrix goeldi .... " I, 224
140. Callithrix santaremensis .... " I, 224
141. Callithrix aurita .... " I, 225
142. Callithrix penicillata .... " I, 226
143. Callithrix p. jordani .... " I, 227
144. Callithrix jacchus .... " I, 228
145. Callithrix flaviceps .... " I, 229
146. Callithrix leucocephala .... " I, 229
147. Callithrix humeralifer .... " I, 230
148. Callithrix albicollis .... " I, 231
149. Callithrix pygmæa .... " I, 232

Genus Callicebus.

Callicebus Thos., Ann. Mag. Nat. Hist., 7th Ser., XII, 1903, p. 456. Type *Callithrix personata* (E Geoffroy).

150. Callicebus torquatus ....Vol. I, 239
151. Callicebus amictus .... " I, 240
152. Callicebus usto-fuscus .... " I, 241
153. Callicebus cupreus .... " I, 242
154. Callicebus calligatus .... " I, 243
155. Callicebus melanochir .... " I, 244
156. Callicebus pænulatus .... " I, 245
157. Callicebus egeria .... " I, 246
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159. Callicebus subrufus .... " I, 247
160. Callicebus hoffmannsi .... " I, 248
161. Callicebus ornatus .... " I, 248
162. Callicebus remulus .... " I, 249
162a. Callicebus donacophilus .... " I, 249
163. Callicebus emiliæ .... " I, 250
164. Callicebus pallescens .... " I, 251
165. Callicebus moloch .... " I, 251
166. Callicebus cinerascens .... " I, 252
167. Callicebus nigrifrons .... " I, 254
168. Callicebus gigot .... " I, 254
169. Callicebus personatus .... " I, 255
170. Callicebus brunneus .... " I, 257

Family Cebidæ.

Subfamily A. Alouattinæ.

Genus Alouatta.

Alouatta Lacépèd., Tabl. Div. Sous-div. Ordres et Genr. Mamm., 1799, p. 4. Type *Simia beelzebul* Linnæus.

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171.	Alouatta caraya	Vol.	I, 265
172.	Alouatta ululata	“	I, 267
173.	Alouatta villosus	“	I, 268
174.	Alouatta beelzebul	“	I, 270
175.	Alouatta palliata	“	I, 271
176.	Alouatta p. mexicana	“	I, 272
177.	Alouatta p. coibensis	“	I, 273
178.	Alouatta æquatorialis	“	I, 274
179.	Alouatta ursina	“	I, 274
180.	Alouatta seniculus	“	I, 277
181.	Alouatta macconnelli	“	I, 281
182.	Alouatta insulanus	“	I, 282
183.	Alouatta juara	“	I, 283
184.	Alouatta sara	“	I, 283

Subfamily B. Pithecinæ.

Genus Pithecia.

Pithecia Desmar., Nouv. Dict. Hist. Nat., XXIV, 1804, p. 8. Type *Simia pithecia* Linnæus.

185.	Pithecia monacha	Vol.	I, 288
186.	Pithecia capillimentosa	“	I, 291
187.	Pithecia albicans	“	I, 292
188.	Pithecia pithecia	“	I, 293
189.	Pithecia chrysocephala	“	I, 294
190.	Pithecia albinasa	“	I, 295
191.	Pithecia satanas	“	I, 296
192.	Pithecia chiropotes	“	I, 297

GENUS CACAJAO.

CACAJAO Less., Spec. Mamm., 1840, p. 181. Type *Simia melanocephala* E. Geoffroy.

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193. CACAJAO CALVUS .... Vol. I, 301
194. CACAJAO RUBICUNDUS .... “ I, 304
195. CACAJAO MELANOCEPHALUS .... “ I, 305

GENUS SAIMIRI.

SAIMIRI Voigt, Cuv. Thierr., I, 1831, p. 95. Type *Simia sciurea* Linnæus.

196. SAIMIRI SCIUREUS .... Vol. I, 310
197. SAIMIRI CASSIQUIARENSIS .... “ I, 311
198. SAIMIRI MACRODON .... “ I, 312
199. SAIMIRI MADEIRÆ .... “ I, 313
200. SAIMIRI USTUS .... “ I, 314
201. SAIMIRI BOLIVIENSIS .... “ I, 315
202. SAIMIRI B. NIGRICEPS .... “ I, 316
203. SAIMIRI ŒRSTEDI .... “ I, 316

SUBFAMILY C. AOTINÆ.

GENUS AOTUS.

AOTUS Humb., Rec. Obs. Zool. et Anat. Comp., 1811, (1815), pp. 306, 356, pl. XXVIII. Type *Simia trivirgata* Humboldt.

204. AOTUS INFULATUS .... Vol. II, 5
205. AOTUS NIGRICEPS .... “ II, 8
206. AOTUS SENEX .... “ II, 8
207. AOTUS RUFIPES .... “ II, 9
208. AOTUS ROBERTI .... “ II, 10
209. AOTUS MIRIQUOUINA .... “ II, 10
210. AOTUS BOLIVIENSIS .... “ II, 11
211. AOTUS LANIUS .... “ II, 12
212. AOTUS VOCIFERANS .... “ II, 13
213. AOTUS GRISEIMEMBRA .... “ II, 15

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214. Aotus trivirgatus .... Vol. II, 16
215. Aotus oseryi .... " II, 17
216. Aotus gularis .... " II, 18
217. Aotus microdon .... " II, 18
218. Aotus spixi .... " II, 19

Subfamily D. Cebinæ.

Genus Ateleus.

Ateles (!) E. Geoff., Ann. Mus. Hist. Nat. Paris, VII, 1806, p. 262. Type *Simia paniscus* Linnæus.

219. Ateleus paniscus .... Vol. II, 28
220. Ateleus ater .... " II, 30
221. Ateleus variegatus .... " II, 31
222. Ateleus marginatus .... " II, 34
223. Ateleus rufiventris .... " II, 36
224. Ateleus grisescens .... " II, 37
225. Ateleus cucullatus .... " II, 38
226. Ateleus belzebuth .... " II, 39
227. Ateleus pan .... " II, 41
228. Ateleus fusciceps .... " II, 43
229. Ateleus geoffroyi .... " II, 44
230. Ateleus hybridus .... " II, 47

Genus Brachyteleus.

Brachyteles (!) Spix, Sim. et Vespert. Bras., 1823, p. 36, pl. XXVII. Type *Brachyteles* (!) *macrotarsus* Spix, = *Brachyteles* (!) *arachnoides* (E. Geoffroy).

231. Brachyteleus arachnoides .... Vol. II, 50

Genus Lagothrix.

Lagothrix E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 106. Type *Lagothrix cana* E. Geoffroy.

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236. Lagothrix cana .... " II, 60
237. Lagothrix infumata .... " II, 62

Genus Cebus.

Cebus Erxl., Syst. Reg. Anim., 1777, p. 44. Type *Simia capucina* Linnæus, (nec Auct.).

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238. Cebus apella ....Vol. II, 78
239. Cebus capucinus .... “ II, 82
240. Cebus c. nigripectus .... “ II, 86
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257. Cebus a. pallidus .... “ II, 108
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259. Cebus crassiceps .... “ II, 111
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FAMILY LASIOPYGIDÆ.

Subfamily Lasiopyginæ.

Genus Papio.

Papio Erxl., Syst. Reg. Anim., 1777, p. 15. Type *Papio sphinx* Erxl., (nec Linn.), = *Papio papio* Desm.

Subgenus Papio.

262. Papio nigeriæ ....Vol. II, 125
263. Papio doguera .... “ II, 126
264. Papio tessellatum .... “ II, 127

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265. PAPIO FURAX .... Vol. II, 128
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267. PAPIO HEUGLINI .... " II, 129
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SUBGENUS CYNOCEPHALUS.

271. PAPIO CYNOCEPHALUS .... Vol. II, 137
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273. PAPIO STREPITUS .... " II, 141
274. PAPIO PRUINOSUS .... " II, 142

SUBGENUS HAMADRYAS.

275. PAPIO HAMADRYAS .... Vol. II, 143
276. PAPIO H. ARABICUS .... " II, 147
277. PAPIO BROCKMANI .... " II, 147

SUBGENUS MORMON.

278. PAPIO SPHINX .... Vol. II, 149
279. PAPIO PLANIROSTRIS .... " II, 151
280. PAPIO LEUCOPHÆUS .... " II, 152

GENUS THEROPITHECUS.

THEROPITHECUS I. Geoff., Archiv. Mus. Hist. Nat., Paris, II, 1843, p. 576. Type *Macacus gelada* Rüppell.

281. THEROPITHECUS GELADA .... Vol. II, 155
282. THEROPITHECUS OBSCURUS .... " II, 157

GENUS CYNOPITHECUS.

CYNOPITHECUS I. Geoff., Resum. Leç. Mamm., 1835, p. 16. Type *Cynopithecus niger* Desmarest.

283. CYNOPITHECUS NIGER .... Vol. II, 162

GENUS MAGUS.

MAGUS Less., Man. Mamm., 1827, pp. 43, 44. Type *Macacus maurus* F. Cuvier.

284. MAGUS OCHREATUS .... Vol. II, 167
285. MAGUS MAURUS .... " II, 169
286. MAGUS TONKEANUS .... " II, 170

Genus Simia.

Simia Linn., Syst. Nat., I, 1758, p. 25. Type *Simia sylvanus* Linnæus.

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287.	Simia sylvanus	Vol.	II, 173

Genus Pithecus.

Pithecus E. Geoff., Mag. Encyclopéd., III, 1795, p. 462. Type *Simia sinica* Linnæus.

288.	Pithecus speciosus	Vol.	II, 190
289.	Pithecus harmandi	“	II, 193
290.	Pithecus rufescens	“	II, 193
291.	Pithecus fuscatus	“	II, 195
292.	Pithecus thibetanum	“	II, 196
293.	Pithecus vestitus	“	II, 197
294.	Pithecus sancti-johannis	“	II, 198
295.	Pithecus lasiotis	“	II, 198
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Subgenus Nemestrinus.

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298.	Pithecus littoralis	“	II, 201
299.	Pithecus cyclopsis	“	II, 202
300.	Pithecus nemestrinus	“	II, 205
301.	Pithecus adustus	“	II, 206
302.	Pithecus insulanus	“	II, 207
303.	Pithecus andamanensis	“	II, 208
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Subgenus Zati.

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Subgenus Macacus.

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338. Pithecus cagayanus .... " II, 251
339. Pithecus pumillus .... " II, 252
340. Pithecus suluensis .... " II, 252

Genus Cercocebus.

Cercocebus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 97. Type *Cercocebus fuliginosus* E. Geoffroy.

Subgenus Cercocebus.

341. Cercocebus torquatus .... Vol. II, 260
342. Cercocebus æthiops .... " II, 261
343. Cercocebus lunulatus .... " II, 263
344. Cercocebus chrysogaster .... " II, 264

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345. Cercocebus agilis .... Vol. II, 264
346. Cercocebus hagenbecki .... " II, 265
347. Cercocebus galeritus .... " II, 265

Subgenus Lophocebus.

348. Cercocebus albigena .... Vol. II, 266
349. Cercocebus a. johnstoni .... " II, 267
350. Cercocebus a. zenkeri .... " II, 269
351. Cercocebus aterrimus .... " II, 270

Genus Rhinostigma.

Rhinostigma Elliot, Rev. Primates, 1912, p. 273. Type *Cercopithecus hamlyni* Pocock.

352. Rhinostigma hamlyni .... Vol. II, 273

Genus Lasiopyga.

Lasiopyga Illig., Prodr. Mamm. Av., 1811, p. 168. Type *Simia nictitans* Linnæus.

Subgenus Allochrocebus.

353. Lasiopyga l'hoesti .... Vol. II, 297
354. Lasiopyga insolita .... " II, 298

Subgenus Rhinostictus.

355. Lasiopyga petaurista .... Vol. II, 299
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369. Lasiopyga stuhlmanni .... " II, 312
370. Lasiopyga neumanni .... " II, 313
371. Lasiopyga doggetti .... " II, 314
372. Lasiopyga princeps .... " II, 315
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380. Lasiopyga inobservata .... " II, 322
381. Lasiopyga sclateri .... " II, 323
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Subgenus Chlorocebus.

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Subgenus Mona.

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497. Pygathrix margarita .... “ III, 81
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Subgenus Semnopithecus.

501. Pygathrix entellus .... Vol. III, 86
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503. Pygathrix schistaceus .... “ III, 92
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505. Pygathrix pileata .... “ III, 94
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507. Pygathrix priamus .... “ III, 96

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508. Pygathrix nemæus .... Vol. III, 98
509. Pygathrix nigripes .... “ III, 100

Genus Rhinopithecus.

Rhinopithecus A. Milne-Ed., Recherch. Mamm., 1872, p. 233, pls. XXXVI, XXXVII. Type *Rhinopithecus roxellanæ* A. Milne-Edwards.

510. Rhinopithecus roxellanæ .... Vol. III, 102
511. Rhinopithecus bieti .... “ III, 103
512. Rhinopithecus brelichi .... “ III, 105
513. Rhinopithecus avunculus .... “ III, 106

Genus Simias.

Simias Miller, Misc. Coll. Smith. Inst. Wash., 1903. Type *Simias concolor* Miller.

514. Simias concolor .... Vol. III, 109

Genus Nasalis.

Nasalis E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 90. Type *Cercopithecus larvatus* Wurmb.

515. Nasalis larvatus .... Vol. III, 111

Genus Colobus.

Colobus Illig., Prodr. Syst. Mamm. et Av., 1811, p. 69.
Type *Simia polycomus* Schreber.

Subgenus Procolobus.

516.	Colobus verus	Vol.	III, 122

Subgenus Tropicolobus.

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Subgenus Piliocolobus.

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542.	Colobus occidentalis	"	III, 144
543.	Colobus poliurus	"	III, 145
544.	Colobus caudatus	"	III, 146
545.	Colobus gallarum	"	III, 148

FAMILY HYLOBATIDÆ.

Genus Hylobates.

Hylobates Illig., Prodr. Syst. Mamm. et Av., 1811, p. 67. Type *Homo lar* Linnæus.

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546.	Hylobates nasutus	Vol.	III, 155
547.	Hylobates hoolock	“	III, 156
548.	Hylobates lar	“	III, 161
549.	Hylobates henrici	“	III, 165
550.	Hylobates leucogenys	“	III, 165
551.	Hylobates gabrielli	“	III, 166
552.	Hylobates leuciscus	“	III, 166
553.	Hylobates agilis	“	III, 168
554.	Hylobates pileatus	“	III, 170
555.	Hylobates concolor	“	III, 171
556.	Hylobates funereus	“	III, 174
557.	Hylobates fuscus	“	III, 175

Genus Symphalangus.

Symphalangus Glog., Hand. u. Hilfsb., I, 1841, pp. XXVII, 34. Type *Pithecus syndactylus* Desmarest.

558.	Symphalangus syndactylus	Vol.	III, 177
559.	Symphalangus s. continentis	“	III, 179
560.	Symphalangus klossi	“	III, 180

FAMILY PONGIIDÆ.

Genus Pongo.

Pongo Lacépèd., Tabl. Mamm., 1799, p. 4. Type *Pongo borneo* Lacépèd., = *Simia pygmæus* Hoppius.

561.	Pongo pygmæus	Vol.	III, 192
562.	Pongo abelii	“	III, 194

Genus Gorilla.

Gorilla I. Geoff., Compt. Rend., XXXIV, 1852, p. 84. Type *Troglodytes gorilla* Wyman.

563.	Gorilla gorilla	Vol.	III, 213
564.	Gorilla g. matschie	“	III, 218

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569. Gorilla g. ——— ?........................ " III, 222
570. Gorilla beringeri .... " III, 223

Genus Pseudogorilla.

Pseudogorilla Elliot Rev. Primates, 1912, p. 224. Type *Gorilla Mayema* Alix et Bouvier.

571. Pseudogorilla mayema ? .... Vol. III, 225

Genus Pan.

Pan Oken, Lehrb. Naturg., 3 Theil, Zool., 2te Abth., 1816, pp. XI, 1230. Type *Simia satyrus* Linn.

572. Pan calvus .... Vol. III, 234
573. Pan fuliginosus .... " III, 240
574. Pan satyrus .... " III, 241
575. Pan kooloo-kamba .... " III, 242
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582. Pan fuscus .... " III, 251
583. Pan ——— ? ex Basho, northwestern Cameroon " III, 252
584. Pan ——— ? ex Dunne, interior of southern Cameroon .... " III, 252
585. Pan ——— ? ex Lomie, interior of Cameroon.. " III, 253

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES

By drawing a line across the American Continent north of Mexico, then passing to the east across the Atlantic and southward around the Cape of Good Hope, (leaving the African Continent to the north), then by Wallace's line between the Indian and Papuan divisions of the Malay Archipelago, (the boundary going between Formosa and the Philippines), and then south and east to the Samoan Archipelago, Huxley has divided the globe into a northern and southern portion called respectively Arctogæa and Notogæa. North of this line in the Nearctic Region no species of the Primates dwells, while in the Eastern Hemisphere only those species belonging to certain islands of the Australian Region are found to the south and east of it. Beginning with the Old World, so called, we find that both Suborders are represented, LEMUROIDEA being entirely absent from the Western Hemisphere. The species of this Suborder are found in the Malagasy Subregion of the East and West African Subregions, and the Indian and Ceylonese Subregions of the Oriental Region. The Island of Madagascar contains nearly one half of the number of the species comprised in the following genera: DAUBENTONIA, CHEIROGALE, MICROCEBUS, MIXOCEBUS, ALTILILEMUR, LEPIDOLEMUR, MYOXICEBUS, LEMUR, LICHANOTUS, PROPITHECUS, and INDRIS, embracing altogether forty-three species and subspecies out of the one hundred and six belonging to the Suborder. The East African Subregion has one species of PERODICTICUS, P. IBEANUS in the Kakamega forest; and eighteen species and subspecies of GALAGO and HEMIGALAGO are found in the East African Subregion, ranging from the vicinity of the White Nile below Khartoum to Mashonaland on the south up to an elevation of 5,000 feet. These are G. DUNNI; G. SENNAARIENSIS; G. GALLARUM; G. HINDSI; G. KIKUYUENSIS; G. LASIOTIS; H. THOMASI; G. BRACCATUS; *G. braccatus albipes;* G. PANGANIENSIS; G. BADIUS; G. ZANZIBARICUS; G. CRASSICAUDATUS; G. KIRKI; G. MOSAMBICUS; G. NYASSÆ; G. SENEGALENSIS; and G. MONTIERI. In the West African Subregion are G. SENEGALENSIS; G. PUPULUS; *G. a. cameronensis;* G. ELEGANTULUS; *G. a. batesi;* G. ANOMURUS; G. DEMIDOFFI; and *G. demidoffi poensis,* and six others. In the South African Subregion are G. NYASSÆ and G. GRANTI. The locality of *G. e. apicalis* is unknown.

In the Indian Subregion of the Oriental Region one species of LORIS, L. LYDEKKERIANUS; and one of NYCTICEBUS, N. COUCANG are found, while the Ceylonese subregion has LORIS TARDIGRADUS. The Indo-Chinese Subregion has four species of NYCTICEBUS: N. PYGMÆUS; N. TENASSERIMENSIS; N. MALAIANUS; and N. CINEREUS; and the Indo-Malay Subregion contains seven species of the same genus, viz.: the one last named together with N. HILLERI; N. BANCANUS; N. JAVANICUS; N. BORNEANUS; N. NATUNÆ; and N. MENAGENSIS.

The members of the Suborder ANTHROPOIDEA are widely distributed over the Old World and are found in all its Zoogeographical divisions excepting the Polynesian and New Zealand subregions. The Ethiopian region is the richest in its number of Primates of all the divisions into which the Globe has been partitioned. It has already been shown that it contains most of the LEMUROIDEA, and now it will be seen that a large proportion of the ANTHROPOIDEA are also found within its limits, the great continent of Africa being responsible for most of the species. PAPIO is the first genus of the ANTHROPOIDEA to be considered, and, in the East African Subregion of this Region, it contains twelve species distributed throughout its length from north to south, Nubia, to Lake Nyassa. They are P. CYNOCEPHALUS; P. HEUGLINI; P. DOGUERA; P. NEUMANNI; P. IBEANUS; P. TESSELLATUM; P. FURAX; P. PRUINOSUS; P. STREPITUS; P. HAMADRYAS; *P. h. arabicus* from Southern Arabia; and P. BROCKMANI. The West African Subregion has P. NIGERIÆ; P. PAPIO; P. SPHINX; P. LEUCOPHÆUS; P. YOKOENSIS; and P. PLANIROSTRIS; while the South African Subregion has but one species P. PORCARIUS.

THEROPITHECUS has but two species, T. GELADA, and T. OBSCURUS; both natives of Abyssinia in the East African Subregion. CYNOPITHECUS and MAGUS take us into the Austro-Malayan Subregion of the Australian Region, where, in Celebes, and the small islands of Menado-tue, Batchian, Muna and Butan, and doubtfully in the Aru Islands, the few species of these genera are found. The next genus in the order adopted is SIMIA, with its single species of S. SYLVANUS found in the southwestern part of the Mediterranean Subregion, in Morocco and Algiers, whence it was introduced on the Rock of Gibraltar. PITHECUS, with its many species, is dispersed over all the recognized Zoogeographical Regions of the Old World except the Australian. Beginning with the Palæarctic Region in the Siberian Subregion, Thibet possesses three species, P. VESTITUS; P. LASIOTIS; and P. THIBETANUM; and one from Cashmere, P. VILLOSUS; and P. FUSCATUS from Japan. The next is the Oriental Region, and in the Indian and Ceylonese Subregions four species are found, P. RHESUS; P. SINICUS; P. ALBIBARBATUS; and P. PILEATUS. In the Indo-Chinese Subregion fifteen species are met with, P. ASSAMENSIS, and this Macaque goes as far to the west, in the Himalaya range of the Indian Subregion, as Masuri; P. SPECIOSUS; (this species found also in Borneo), P. NEMESTRINUS; P. IRUS; P. ANDAMANENSIS; P. RUFESCENS; P. ADUSTUS; P. INSULANS; P. VITIIS; P. HARMANDI; P. BREVICAUDUS; P. SANCTI-JOHANNIS; P. CYCLOPSIS; P. VALIDUS; and P. LITTORALIS. The Indo-Malayan Subregion of this region contains twenty-six species dispersed through the lower Malayan Peninsula and the numerous islands of the various Archipelagoes. They are P. CAPITALIS; P. FASCICULARIS; P. NEMESTRINUS; P. UMBROSUS; P. FUSCUS; P. PHÆURUS;

P. AGNATUS; P. LAPSUS; P. ALACER; P. MORDAX; P. RESIMUS; P. BAWEANUS; P. CUPIDUS; P. PAGENSIS; P. LINGÆ; P. IMPUDENS; P. KARIMONI; P. BINTANGENSIS; P. DOLLMANI; P. PUMILLUS; P. MANDIBULARIS; P. LAUTENSIS; P. LINGUNGENSIS; P. SIRHASSENENSIS; P. CARIMATÆ; and P. LÆTUS, and those of the Philippine and Sulu islands.

CERCOCEBUS is an African genus exclusively confined to the Ethiopian Region. In East Africa from the Tana River to Uganda and the Upper Congo four species are found: C. GALERITUS; *C. a. johnstoni;* C. CHRYSOGASTER; and C. HAGENBECKI; and West Africa has the remaining species, six in all, ranging from Sierra Leone to the Lower Congo: C. ÆTHIOPS; C. LUNULATUS; C. TORQUATUS; C. ATERRIMUS; C. ALBIGENA; *C. a. zenkeri;* and C. AGILIS.

The genus RHINOSTIGMA contains but one species, R. HAMLYNI, from the Ituri Forest, East Africa, apparently a link between the last genus and the one succeeding, and remarkable for the shape of its face, (which is similar to that of a Barn-Owl), and the mark over the nose from forehead to upper lip, and the small fifth cusp on the last lower molar.

The great genus LASIOPYGA, containing the largest number of species of all those included in the Order Primates, succeeds RHINOSTIGMA. It is entirely confined to the Ethiopian Region, its members dispersed over the African Continent save along the Mediterranean littoral. The East African Subregion of the Ethiopian Region contains forty species and subspecies, L. NEGLECTA Schlegel, (nec Auct.); L. GRISEOVIRIDIS; L. BOUTOURLINI; L. MATSCHIE; L. DJAMDJAMENSIS; L. HILGERTI; L. STUHLMANNI; L. AURORA; L. BUDGETTI; L. GRISEISTICTA; L. DOGGETTI; L. CARRUTHERSI; L. DENTI; L. SCHMIDTI; L. THOMASI; L. KANDTI; L. STAIRSI; L. NEUMANNI; L. CALLIDA; L. CENTRALIS; *L. c. whytei; L. c. johnstoni; L. c. lutea;* L. KOLBI; *L. k. hindei; L. k. nubilis;* L. RUFOVIRIDIS; L. RUBELLA; L. PYGERYTHRA; L. ALBIGULARIS; *L. a. kinobotensis; L. a. rufilata;* L. RUFITINCTA; L. OPISTHOSTICTA; L. LEUCAMPYX; L. MOLONEYI; L. FRANCESCÆ; L. SILACEA; L. SIGNATA; and L. PRINCEPS. In the West African Subregion beginning in Senegambia is L. CALLITRICHUS; then follow going south, L. CAMPBELLI; L. DIANA; L. BUTTIKOFERI; L. ROLOWAY; L. FANTIENSIS; L. BURNETTI; L. MONA; L. TANTALUS; *L. t. alexandri;* L. INSOLITA; L. PREUSSI; L. BRAZZÆ; L. NICTITANS; L. STICTICEPS; L. GRAYI; *L. g. pallida;* L. SIGNATA; L. PETRONELLÆ; L. SCLATERI; L. PETAURISTA; *L. c. laglaizi;* L. CEPHUS; L. CEPHODES; L. MARTINI; L. ERYTHROTIS; L. POGONIAS; *L. p. nigripes;* L. INSULARIS; L. ASCANIUS; L. WHITESIDI; L. PLUTO; L. CYNOSURA; L. WOLFI; and L. INSIGNIS;

thirty-five in all. The South African Subregion has L. ALBIGULARIS; L. RUFOVIRIDIS; *L. a. beirensis; L. s. mosambicus;* L. PYGERYTHRA; and L. LABIATA; six species. Eight remain whose habitat is entirely unknown, L. L'HOESTI; L. NIGRIVIRIDIS; L. INOBSERVATA; L. WERNERI; L. NIGRIGENSIS; L. ERYTHROGASTER; L. TEMMINCKI and L. ALBITORQUATA.

MIOPITHECUS follows LASIOPYGA; indeed up to the present time its species were always included in the last genus. It has only two members, both natives of the East African Subregion of the Ethiopian Region, their range extending from Southern Cameroon to, and including, Angola. They are M. TALAPOIN and M. ANSORGEI.

ERYTHROCEBUS contains the long-legged reddish colored Guenons, heretofore included in LASIOPYGA. They are inhabitants of the Ethiopian Region, six being dwellers of the East African Subregion, E. PYRRHONOTUS; E. POLIOPHÆUS; E. ALBIGENIS; E. FORMOSUS; E. WHYTEI; and E. BAUMSTARKI. Five are inhabitants of the West African Subregion, E. PATAS; E. KERSTINGI; E. ZECKI; E. LANGELDI; and E. SANNIO. The locality of one species, E. CIRCUMCINCTUS, is unknown.

We now come to PYGATHRIX one of the largest genera of the ANTHROPOIDEA. Its members are natives of the Palæarctic and Oriental Regions. Two species only are found in the first of these, P. SCHISTACEUS and P. LANIA. In the Indian Subregion of the Oriental Region is found but one species, P. ENTELLUS. In the Ceylonese Subregion seven species are met with: P. CEPHALOLOPTERA; *P. c. monticola;* P. SENEX; P. JOHNI; P. URSINA; P. HYPOLEUCA; and P. PRIAMUS. In the Indo-Chinese Subregion of this Region are found eight species: P. PILEATA; P. FRANÇOISI; P. CREPUSCULA; *P. c. wroughtoni;* P. MARGARITA; P. GERMAINI; P. NEMÆUS; and P. NIGRIPES. The Indo-Malayan Subregion contains the remaining species: P. MELANOLOPHA; P. NOBILIS; P. RUBICUNDA; P. CARIMATÆ; P. FRONTATA; P. HOSEI; P. THOMASI; P. POTENZIANI; P. AURATA; P. CRISTATA; *P. c. pullata;* P. ULTIMA; P. ALBIPES; P. NUDIFRONS; P. CRUCIGER; P. CHRYSOMELAS; P. SUMATRANA; P. BATUANA; P. PERCURA; P. FEMORALIS; P. MELAMERA; P. BARBEI; P. PHAYREI; P. FLAVICAUDA; P. ROBINSONI; P. OBSCURA; P. CARBO; P. SANCTORUM; P. NUBIGENA; P. DILECTA; P. NATUNÆ; P. RHIONIS; P. CANA; P. SIAMENSIS; P. CATEMANA; P. AYGULA; P. FUSCO-MURINA; P. SABANA; and P. EVERETTI. P. HOLOTOPHREA is the only one whose locality is unknown.

RHINOPITHECUS is a small genus with four known species, belonging to the Siberian and Manchurian Subregions of the Palæarctic

Region; and go as far as Tonkin and eastern Thibet. They are R. ROXELLANÆ; R. BIETI; R. BERLICHI, and R. AVUNCULUS. SIMIAS and NASALIS each with a single species are natives of the islands of South Pagi and Borneo respectively of the Indo-Malayan Subregion of the Oriental Region. COLOBUS is a genus of the Ethiopian Region its members being entirely restricted to the Continent of Africa, the greatest number of species dwelling in the East African Subregion, and ranging from Abyssinia to Nyassaland and from Gambia to Angola. In the East African Subregion fifteen species are found, which, beginning with the most northern are as follows: C. ABYSSINICUS; C. POLYURUS; C. GALLARUM; C. ELLIOTI; C. TEPHROSCELES; C. RUWENZORI; C. CAUDATUS; C. RUFOMITRATUS; C. PALLIATUS; C. KIRKI; C. GRAUERI; C. SHARPEI; C. GODONORUM; and C. ANGOLENSIS. In the West African Subregion are C. BOUVIERI; C. FULIGINOSUS; C. VELLEROSUS; C. SATANAS; C. FERRUGINEUS; C. RUFO-NIGER; C. VERUS; *C. a. occidentalis;* C. PREUSSI; C. POLYCOMUS; and C. PENNANTI. Four species are found in Central Africa, and C. TEMMINCKI's habitat is unknown.

HYLOBATES or Gibbons are natives of two of the recognized Zoogeographical Regions, the Indian and the Oriental. Of the first of these in the Indo-Chinese Subregion are H. HOOLOCK; H. LAR; H. LEUCOGENYS; H. GABRIELLI; H. HENRICI; H. PILEATUS; and H. NASUTUS. In the Indo-Malayan Subregion are H. LAR; H. AGILIS; H. LEUCISCUS; H. CONCOLOR; H. FUNEREUS; and H. FUSCUS; the last two being of doubtful validity. The other genus of Gibbons SYMPHALANGUS has S. SYNDACTYLIS, with one rather doubtful subspecies, *S. s. continentis;* and S. KLOSSI; all in the Indo-Malay Subregion of the Indian Region. We now reach the PONGIIDÆ containing the great Apes, the remaining members of the Primates. PONGO the first genus has one species, P. PYGMÆUS, (a second being doubtfully possible P. ABELII,) from the great islands of Borneo and Sumatra in the Indo-Malay Subregion of the Indian Region. The second genus GORILLA has all its members save one in the West African Subregion of the Ethiopian Region. These are G. GORILLA; *G. g. castaneiceps; G. g. matschie; G. g. jacobi;* and *G. g. diehli.* In the East African Subregion G. BERINGERI is found in the German Protectorate, in all, two species and four subspecies. Of the majority of these it must be said that they are very doubtfully separable from G. GORILLA, all the knowledge we have of them having been gathered from very insufficient material.

PSEUDOGORILLA has one species P. MAYEMA? from the Congo forest.

The last genus of the Primates of the Old World is PAN embracing the Chimpanzees. Fifteen species are tentatively acknowledged in this work, but we are without sufficient information regarding them, and their validity is in almost as great uncertainty as is that of some of the species of the genus GORILLA. The ranges of these different species are either not known at all, or very imperfectly, and the greater number of forms are found in the West African Subregion from Sierra Leone to the Gaboon. In this comparatively restricted district of the African Continent all the species of Chimpanzees, save two, so far as is known, are to be met with. They are P. CALVUS; P. FULIGINOSUS; P. SATYRUS; P. KOOLOO-KAMBA; P. LEUCOPRYMNUS; P. PYGMÆUS; P. CHIMPANSE; P. AUBRYI; P. VELLEROSUS; and P. FUSCUS. All these are found in Gaboon and Cameroon, save two, P. VELLEROSUS absent from Gaboon, and P. SATYRUS not found in Cameroon. In the East African Subregion two species only are known to dwell, P. SCHWEINFURTHI in the Nyam-nyam country, and *P. s. marungensis* from the vicinity of the Albert Nyanza, and in the Congo forest.

In Neogea, embracing the Western Hemisphere, we find the Primates are represented in the Neotropical region only, and Mexico contains the forms that reach the highest northern limit. Here is found a subspecies of ALOUATTA, *A. p. mexicana* in the State of Vera Cruz, and one species of ATELEUS, A. PAN. Two species are found in Guatemala, ALOUATTA VILLOSA; and ATELEUS PAN. Nicaragua has five species of Primates, one, AOTUS RUFIPES, (but doubtfully a resident of that State); ALOUATTA PALLIATA; ATELEUS GEOFFROYI; A. ATER: and CEBUS CAPUCINUS. Costa Rica is represented by two species of different genera ŒDIPOMIDAS GEOFFROYI; and SAIMIRI ŒRSTEDI; both also met with in Panama; and on Coiba Island in the Bay of Panama *Alouatta p. coibensis* is found. On the Island of Trinidad ALOUATTA INSULANUS is met with. On the continent of South America beginning with the Guianas, Brazilian Subregion, five species are found in all: SAIMIRI SCIURUS; AOTUS TRIVIRGATUS; ALOUATTA MACCONNELLI; ATELEUS PANISCUS; and CEBUS APELLA; some of these having a wide distribution in South America. French Guiana possesses besides the species just named, CERCOPITHECUS RUFIMANUS and PITHECIA CAPILLIMENTOSA; and British Guiana has four additional, CERCOPITHECUS MIDAS; PITHECIA SATANAS; P. CHIROPOTES; and CEBUS CASTANEUS. Dutch Guiana has also CERCOPITHECUS MIDAS. Venezuela has eight species of Primates: CERCOPITHECUS URSULUS; CALLICEBUS TORquatus; Saimiri sciureus; S. cassiquiarensis; Alouatta ursina; Ateleus variegatus; A. beelzebuth; and Cebus apiculatus Brazil with its immense extent of territory and vast forests contains the greatest proportion of the American Primates. It has two Seniocebus, S. bicolor and S. martinsi; one Cercopithecus ursulus; nine Leontocebus; L. chrysomelas; L. rosalia; L. chrysopygus; L. mystax; L. nigricollis; L. imperator; L. nigrifrons; L. labiatus; and L. thomasi. Of Callithrix, it has thirteen species: C. santaremensis; C. jacchus? C. albicollis; C. humeralifer; C. penicillata; *C. p. jordani;* C. leucocephala; C. argentata; C. aurita; C. flaviceps; C. chrysoleuca; C. pygmæa; and C. leucopus. Callicebus is represented by three species: C. emiliæ; C. torquatus; and C. amictus. Aotus has five species: A. trivirgatus; A. roberti; A. infulatus; A. miriquouina; and A. vociferans. Alouatta gives three species: A. beelzebul; A. caraya; and A. juara; while Pithecia has six: P. satanas; P. chiropotes; P. albicans; P. chrysocephala; P. albinasa; and P. monacha. Cacajao is entirely Brazilian and all its three species are found within that territory. Ateleus appears to be represented by only three species: A. marginatus; A. variegatus; and A. paniscus. The single species of Brachyteleus is a native of Brazil; and Lagothrix has four species: L. lagotricha; L. cana; L. ubericola; and L. thomasi. Cebus has eight species inhabiting Brazil, C. variegatus; C. unicolor; C. macrocephalus; C. versuta; C. libidinosus; C. cirrifer; C. caliginosus; C. azaræ; and three doubtful, their exact localities being unknown, C. crassiceps; C. vellerosus; and C. frontatus.

On the western side of the Continent, Colombia contains sixteen of the species of Primates, one Seniocebus meticulosus; one Œdipomidas salaquiensis; one Saimiri sciureus; three Aotus; A. vociferans; A. griseimembra; and A. lanius; one Alouatta; A. seniculus; four Ateleus; A. geoffroyi; A. ater; A. rufiventer; and A. hybridus. Lagothrix has but one species lagotricha. Cebus has four and one subspecies: C. flavus; C. chrysopus; C. malitiosus; *C. c. nigripectus;* and C. fatuellus. Ecuador, the next State, has twelve species: Saimiri madeiræ; and S. macrodon; Aotus gularis; and A. microdon; Alouatta æquatorialis; Pithecia monacha; Ateleus paniscus; Lagothrix infumata; L. lugens; and Callicebus has C. cupreus; C. pænulatus; and C. leucometopa. Peru has nineteen species: Callicebus torquatus; C. amictus; C personatus; C. cupreus; and C. subrufus. Saimiri b. nigriceps; and S. macrodon; four Aotus: A. trivirgatus; A. nigriceps; A. senex; and A. oseryi.

Alouatta has but one species URSINA; PITHECIA two, P. SATANAS; and P. MONACHA; ATELEUS one, VARIEGATUS. LAGOTHRIX also one, LAGOTRICHA; and CEBUS three, *C. a. pallidus; C. u. cuscinus;* and *C. f. peruanus.* In Bolivia, the last portion of South America in which Primates occur, four species are found: CALLICEBUS DONACOPHILUS; SAIMIRI USTUS; AOTUS BOLIVIENSIS; and ALOUATTA SARA. From the above recapitulation it will be seen that the Brazilian Subregion is the home of the Primates in the New World. Every genus save one, ŒDIPOMIDAS, is represented within its boundaries, and two, CACAJAO and BRACHYTELEUS are not found elsewhere. On the eastern border of the Neotropical region no Primate is found below the southern limit of the Brazilian Subregion, but on the western side the Order has its representatives in Peru and Bolivia of the Chilian Subregion.

The geographical distribution of each species, so far as known, is shown in the following list.

LEMUROIDEA.

DAUBENTONIIDÆ.

DAUBENTONIA.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

1. DAUBENTONIA MADAGASCARIENSIS. Island of Madagascar on the east coast from the Bay of Antongil to Mehanoro.

TARSIIDÆ.

TARSIUS.

Range of the Genus.

ORIENTAL AND AUSTRALIAN REGIONS.

Range of the Species.

2. TARSIUS PHILIPPINENSIS. Island of Samar, Philippine Archipelago.
3. TARSIUS FRATERCULUS. Island of Bohol, Philippine Archipelago.

4. Tarsius sanghirensis. Island of Sanghir, Philippine Archipelago.
5. Tarsius saltator. Billiton Island, Indo-Malayan Archipelago.
6. Tarsius borneanus. Island of Borneo, Indo-Malayan Archipelago.
7. Tarsius bancanus. Island of Java, Indo-Malayan Archipelago.
8. Tarsius fuscus. Island of Celebes, Austro-Malayan Archipelago.

Nycticibidæ.

Loris.

Range of the Genus.

Oriental Region.

Range of the Species.

9. Loris tardigradus. Island of Ceylon.
10. Loris lydekkerianus. Southern India, Madras and possibly on the west coast near Ratnageri.

Nycticebus.

Range of the Genus.

Oriental Region.

Range of the Species.

11. Nycticebus borneanus. Sakaiam River, Sanggan district, West Borneo.
12. Nycticebus bancanus. Klabat Bay, Island of Banka.
13. Nycticebus tenasserimensis. Tenasserim, Malay Peninsula.
14. Nycticebus coucang. Bengal, Upper Burma, possibly Annam.
15. Nycticebus cinereus. Siam, Cochin China.
16. Nycticebus javanicus. Island of Java.
17. Nycticebus natunæ. Natuna Islands, Malayan Archipelago.
18. Nycticebus malaianus. Arakan to Tringanu, Lower Siam; coast region of Sumatra.
19. Nycticebus hilleri. Island of Sumatra.
20. Nycticebus menagensis. Philippine Archipelago.
21. Nycticebus pygmæus. Annam.

ARCTOCEBUS.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

22. ARCTOCEBUS CALABARENSIS. Old Calabar, West Africa.
23. ARCTOCEBUS AUREUS. French Congo, West Africa.

PERODICTICUS.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

24. PERODICTICUS POTTO. Sierra Leone to the Gold Coast.
25. PERODICTICUS JU-JU. Nigeria.
26. PERODICTICUS IBEANUS. Kakamega forest, near Mt. Elgon British East Africa.
27. PERODICTICUS FAUSTUS. Central Congo, Africa.
28. PERODICTICUS EDWARDSI. Cameroon to French Congo, West Africa.

GALAGO.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

29. GALAGO CRASSICAUDATUS. East Africa and Island of Zanzibar.
30. GALAGO ZULUENSIS. Zululand, East Africa.
31. GALAGO PANGANIENSIS. Pangani River, East Africa.
32. GALAGO GARNETTI. Natal, East Africa.
33. GALAGO BADIUS. Ugalla River, German East Africa.
34. GALAGO MONTEIRI. Middle Coast, Cuio Bay to Angola, West Africa.
35. GALAGO KIRKI. Nyassaland, Mozambique.
36. GALAGO LASIOTIS. East Africa.

37. Galago hindsi. Katwi, Athi River, British East Africa.
38. Galago kikuyuensis. Escarpment Station, British East Africa.
39. Galago alleni. Cameroon, Gaboon, and Island of Fernando Po, West Africa.
40. Galago alleni cameronensis. Cameroon, West Africa.
41. Galago alleni gabonensis. Gaboon, West Africa.
42. Galago alleni batesi. Gaboon, West Africa.
43. Galago zanzibaricus. Island of Zanzibar.
44. Galago talboti. Southern Nigeria.
45. Galago gallarum. Boran-Galla country, East Africa.
46. Galago braccatus. German East Africa.
47. Galago braccatus albipes. British East Africa.
48. Galago dunni. Somaliland, East Africa.
49. Galago nyassæ. Portuguese East Africa.
50. Galago granti. Portuguese East Africa.
51. Galago senegalensis. Senegal, West Africa.
52. Galago sennaariensis. Sennaar, Ankole, west of the Victoria Nyanza, Nyassaland, East Africa.
53. Galago mosambicus. Tete, Mozambique, East Africa.
54. Galago pupulus. Nigeria, West Africa.
55. Galago elegantulus. Cameroon, West Africa.
56. Galago e. tonsor. Spanish Guinea, West Africa.
57. Galago e. pallidus. Southern Cameroon, Island of Fernando Po.
58. Galago e. apicalis. Equatorial Africa. Locality unknown.

Hemigalago.

Range of the Genus.

Ethiopian Region.

Range of the Species.

59. Hemigalago demidoffi. Gold Coast to Great Basin of the Congo, West and Central Africa, Mombuttu, Equatorial Africa.
60. Hemigalago d. poensis. Island of Fernando Po.
61. Hemigalago anomurus. French Congo, West Africa.
62. Hemigalago thomasi. Semliki River, Central Africa

CHIROGALE.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

63. CHIROGALE MAJOR. Eastern coast of Madagascar, Fort Dauphin to Tamatave, also in the lower wooded regions of Betsileo Province, and on the west coast from Tullare to Pasandava.
64. CHIROGALE MELANOTIS. North east coast of Madagascar.
65. CHIROGALE SIBREEI. East of Antananarivo, Madagascar.
66. CHIROGALE CROSSLEYI. Forests east of Antsianak, Madagascar.
67. CHIROGALE TRICHOTIS. Forests of Antsianak, Madagascar

MICROCEBUS.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

68. MICROCEBUS MURINUS. Betsileo Province to Fort Dauphin on the south east coast of Madagascar, and on the south west coast northerly from St. Augustine Bay.
69. MICROCEBUS MYOXINUS. West and south west coasts of Madagascar from Cape St. Vincent to Tullear on St. Augustine Bay.
70. MICROCEBUS COQUERELI. Island Africaina; west coast of Madagascar from Cape St. Vincent to Helville.
71. MICROCEBUS FURCIFER. Eastern coast of Madagascar, from Fort Dauphin on the south to Mt. Ambre on the north; and down west coast to Cape St. Vincent.

MIXOCEBUS.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

72. MIXOCEBUS CANICEPS. Island of Madagascar; locality unknown.

ALTILILEMUR.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

73. ALTILILEMUR MEDIUS. West coast of Madagascar.
74. ALTILILEMUR THOMASI. Fort Dauphin, south east coast of Madagascar.

LEPIDOLEMUR.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

75. LEPIDOLEMUR GLOBICEPS. "South west Madagascar."
76. LEPIDOLEMUR GRANDIDIERI. North west Madagascar.
77. LEPIDOLEMUR LEUCOPUS. South eastern Madagascar.
78. LEPIDOLEMUR MUSTELINUS. East coast of Madagascar; Fort Dauphin to Mt. Ambre.
79. LEPIDOLEMUR MICRODON. Eastern district of Betsileo Province, Madagascar.
80. LEPIDOLEMUR RUFICAUDATUS. South western Madagascar; Marinda to Masikora.
81. LEPIDOLEMUR EDWARDSI. North western Madagascar.

MYOXICEBUS.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

82. MYOXICEBUS GRISEUS. Eastern side of Betsileo Province; and northwest side to Ifasay, Madagascar.
83. MYOXICEBUS OLIVACEUS. Eastern coast of Madagascar from Betsileo Province; and north west parts to Ifasay.
84. MYOXICEBUS SIMUS. North east coast of Madagascar.

LEMUR.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

85. LEMUR MONGOS. South and south western portions of Betsileo Province, Central Madagascar. Province Anossi.
86. LEMUR CORONATUS. North eastern Madagascar from Bay de Diego to Vohemar.
87. LEMUR NIGRIFRONS. Islands of Madagascar and Mayotte.
88. LEMUR FULVUS. Northern part of Island of Madagascar.
89. LEMUR RUFIFRONS. West coast of Madagascar from Cape St. Vincent on the south to Baly on the north.
90. LEMUR RUBRIVENTER. Eastern coast of Madagascar from Teneriffe to Fort Dauphin; north east Betsileo Province, and southern Betsileo, confines of the Tonales of Ikongo.
91. LEMUR RUFUS. Southern Madagascar, River Tsidsibon to River Mangonka.
92. LEMUR ALBIFRONS. Eastern coast of Madagascar from Masindrano to Bay of Antongil.
93. LEMUR CINEREICEPS. Island of Madagascar. Locality not given.
94. LEMUR MACACO. North west Madagascar, Ifasay to Manaharana.
95. LEMUR NIGERRIMUS. North west Madagascar, Ifasay to Cape Ambre.
96. LEMUR CATTA. South and south western borders of Betsileo Province; Province Anossi.
97. LEMUR VARIEGATUS. North eastern Madagascar from Adanfrone to Cape Masoala at entrance of Antongil Bay; and interior to Bengoa.
98. LEMUR V. RUBER. Eastern Madagascar; from Bay of Antongil to Masindrano.

LICHANOTUS.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

99. LICHANOTUS LANIGER. Eastern coast of Madagascar; and the Bay of Pessandava on the west coast. St. Mary's Island.

PROPITHECUS.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

100. **PROPITHECUS DIADEMA.** Northeast Madagascar between the rivers Lokoy and Bemarivo.
101. **PROPITHECUS D. EDWARDSI.** South eastern coast of Madagascar from the Masora River to the Taraouny; and the forests of the interior near Fienerentova.
102. **PROPITHECUS D. SERICEUS.** Narrow belt of forest between the rivers Lokoy and Bemarivo, on eastern side of the mountains in north eastern Madagascar.
103. **PROPITHECUS VERREAUXI.** South west coast of Madagascar, between the southern base of the eastern range of mountains and the River Tsidsibon.
104. **PROPITHECUS V. DECKENI.** Middle of the west coast of Madagascar on the great plains between the rivers Mananbolo and Manzarayo.
105. **PROPITHECUS V. COQUERELI.** North west coast of Madagascar between the south side of Marendry Bay and the north side of Bembatoko Bay; the Betseboka River being the southern limit of its range, and the Loza the northern.
106. **PROPITHECUS V. CORONATUS.** North west coast of Madagascar between the Bay of Mozamba on the north, the River Betseboka on the east, and the River Manzarayo on the west, in the country of Boeny; extending its range for some distance into the interior.

INDRIS.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

107. **INDRIS INDRIS.** Eastern coast of Madagascar in forests on the eastern side of the high mountains between the Bay of Antongil on the north, and the River Masora on the south.

ANTHROPOIDEA.

CALLITRICHIDÆ.

SENIOCEBUS.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

108. SENIOCEBUS BICOLOR. Eastern bank of the Rio Negro, Brazil. Pebas, Peru; Upper Amazon west of Barra.
109. SENIOCEBUS METICULOSUS. Forests of the River San Jorge, Colombia.
110. SENIOCEBUS MARTINSI. Faro, Lower Yamundá River, Amazon, Brazil.

CERCOPITHECUS.

Range of the Genus.

NEOTROPICAL REGION

Range of the Species.

111. CERCOPITHECUS MIDAS. English and Dutch Guianas.
112. CERCOPITHECUS RUFIMANUS. French Guiana, banks of the Rio Araguay. Province of Goyas, Brazil.
113. CERCOPITHECUS URSULUS. Lower Amazon; and near the mouth of the River Tocantins.

LEONTOCEBUS.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

114. LEONTOCEBUS LABIATUS. Forests on the north side of the Amazon, Rio Javari, Rio Solimoens, and in Peru.
115. LEONTOCEBUS PILEATUS. Upper Amazon, range unknown.
116. LEONTOCEBUS THOMASI. Tonantins, Upper Amazon.

117. LEONTOCEBUS NIGRIFRONS. River Javari on border of Brazil and Peru; and on Cotopaza River, Ecuador.
118. LEONTOCEBUS NIGRICOLLIS. Upper Amazon; Pebas, Ecuador.
119. LEONTOCEBUS CHRYSOPYGUS. Vicinity of Ypanema, Sao Paulo, Brazil.
120. LEONTOCEBUS MYSTAX. Forests between the Solimoens and Iça Rivers, Brazil.
121. LEONTOCEBUS WEDELLI. Apolamba Province, Bolivia.
122. LEONTOCEBUS DEVILLII. Eastern Peru.
123. LEONTOCEBUS APICULATUS. Banks of Cotopaza River, Ecuador.
124. LEONTOCEBUS ILLIGERI. Colombia, and banks of the Cotopaza River, Ecuador.
125. LEONTOCEBUS TRIPARTITUS. Bank of the Rio Napo, Ecuador.
126. LEONTOCEBUS LAGONOTUS. Upper Amazon.
127. LEONTOCEBUS FUSCICOLLIS. Between the Iça and Solimoens Rivers in Brazil, and the vicinity of Pebas, Peruvian Amazons; and the banks of the Javari River, boundary between Brazil and Peru.
128. LEONTOCEBUS GRAELLSI. Banks of the Rio Napo, Ecuador.
129. LEONTOCEBUS IMPERATOR. Banks of the Rio Purrus, tributary of the Amazon, western Brazil.
130. LEONTOCEBUS ROSALIA. Forests of southern Brazil, Province of Rio de Janeiro. Upper Amazon.
131. LEONTOCEBUS LEONINUS. Popayan, Brazil.
132. LEONTOCEBUS CHRYSOMELAS. Forests of the Rio Ilhéos, and Rio Pardo, Brazil.

ŒDIPOMIDAS.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

133. ŒDIPOMIDAS ŒDIPUS. Coast of Colombia.
134. ŒDIPOMIDAS GEOFFROYI. Costa Rica and Panama, Central America.
135. ŒDIPOMIDAS SALAQUIENSIS. Forest of the Salaqui River, Colombia.

CALLITHRIX.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

136. CALLITHRIX ARGENTATA. Provinces of Para and Matto Grosso, Brazil; Bolivia.
137. CALLITHRIX LEUCOPUS. Province of Antioquia, Colombia.
138. CALLITHRIX CHRYSOLEUCA. Borba, on the Lower Madeira River, Brazil.
139. CALLITHRIX GŒLDI. Para, Brazil.
140. CALLITHRIX SANTAREMENSIS. Mouth of River Tapajos, Amazon.
141. CALLITHRIX AURITA. Province of Sao Paulo, and the banks of the Upper Parana, Brazil.
142. CALLITHRIX PENICILLATA. Province of Goyas, Minas Geræs, and Espirito Santo, Brazil.
143. CALLITHRIX P. JORDANI. Banks of Rio Jordao, S. W. Minas Geræs, Brazil.
144. CALLITHRIX JACCHUS. Island of Marajo, Brazil.
145. CALLITHRIX FLAVICEPS. Engenheiro Reeve, Espirito Santo, Brazil.
146. CALLITHRIX LEUCOCEPHALA. Provinces of Minas Geræs, and Espirito Santo, Brazil.
147. CALLITHRIX HUMERALIFER. Vicinity of Bahia, to the Bay of Todos os Santos, Brazil.
148. CALLITHRIX ALBICOLLIS. Vicinity of Bahia, Brazil.
149. CALLITHRIX PYGMÆA. Forests along the Solimoens and Ucayali Rivers, Brazil, north into Mexico.

CALLICEBUS.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

150. CALLICEBUS TORQUATUS. Upper reaches of the Rio Negro, the forests near the Rio Cassiquiare, and the Rio Guaviaré near St. Fernando de Atabapo; mountains on the right bank of the Orinoco near Mission of Santa Barbara; and the forests of Olivença on the right bank of the Rio Solimoens; and in Southern Peru.

151. Callicebus amictus. Upper Amazon region, Brazil.
152. Callicebus ustofuscus. Brazil, exact locality unknown.
153. Callicebus cupreus. Regions of the Peruvian Amazon; Rio Solimoens, Rio Ucayali, and Rio Huallaga; Cotopaza River, and Andoas, Ecuador.
154. Callicebus caligatus. Banks of the Rio Madeira, near Borba, western Brazil.
155. Callicebus melanochir. East coast of Brazil from the Rio St. Matheus to Sertan de Bahia.
156. Callicebus pænulatus. Banks of the Rio Pastas, Ecuador.
157. Callicebus egeria. Teffé, Middle Amazon, Brazil.
158. Callicebus leucometopa. Ecuador.
159. Callicebus subrufus. Pachite, Ucayali River, Peru
160. Callicebus hoffmannsi. Urucurituba, Santarem, Lower Amazon, Brazil.
161. Callicebus ornatus. Colombia and Peru.
162. Callicebus remulus. Santarem, Lower Amazon, Brazil.
163. Callicebus donacophilus. Province of Sara, Bolivia.
164. Callicebus emiliæ. Received from Para. Range unknown.
165. Callicebus pallescens. Paraguay.
166. Callicebus moloch. Banks of the Rio Para near the mouth of the Rio Tapajos, Lower Amazon, Brazil.
167. Callicebus cinerascens. Forests of the Potomaio and Içа Rivers, on the border of Peru.
168. Callicebus nigrifrons. Province of Minas Geræs to that of Rio de Janeiro, Brazil.
169. Callicebus gigot. South of Bahia near Ilhéos; New Freibourg, between the Rio Parahyba and the mountains north of the Bay of Rio de Janeiro.
170. Callicebus personatus. Region of the Upper Amazon, south to Latitude 14°.
171. Callicebus brunneus. Falls of the Bonaneira, Rio Marmoré, Brazil.

Cebidæ.

Alouatta.

Range of the Genus.

Neotropical Region.

Range of the Species.

172. Alouatta caraya. Upper Amazon, Southern Brazil; Argentine, and Bolivia.

173. Alouatta ululata. Maranhao, Lower Amazon, Brazil.
174. Alouatta villosus. Guatemala, and Honduras.
175. Alouatta beelzebul. Para to Rio Madeira, Lower Amazon, Brazil.
176. Alouatta palliata. Nicaragua; Costa Rica; Panama; Central America.
177. Alouatta p. mexicana. State of Vera Cruz, Mexico.
178. Alouatta p. coibensis. Coiba Island, west coast of Panama.
179. Alouatta æquatorialis. West coast of Ecuador.
180. Alouatta ursina. Venezuela; Bahia to Province of Espirito Santo, Brazil; Peru.
181. Alouatta seniculus. Colombia; and forests between Rio Negro and Rio Solimoens; Rio Madeira.
182. Alouatta macconnelli. Coast of Demarara, English and French Guianas; Cayenne to coast north of the Amazon.
183. Alouatta insulanus. Island of Trinidad.
184. Alouatta juara. Rio Juara, Upper Amazon.
185. Alouatta sara. Province of Sara, Bolivia.

Pithecia.

Range of the Genus.

Neotropical Region.

Range of the Species.

186. Pithecia monacha. North bank of the Upper Amazon from Tonantins extending into Peru, Ecuador.
187. Pithecia capillimentosa. Cayenne.
188. Pithecia albicans. Tonantins to Peru; on the Solimoens River, Brazil.
189. Pithecia pithecia. English and French Guianas; and region of the Rio Negro and Rio Branco.
190. Pithecia chrysocephala. Near Barra, Rio Negro, Brazil. Range unknown.
191. Pithecia albinasa. Santarem, Lower Amazon, Brazil.
192. Pithecia satanas. British Guiana; forests near Para, Lower Amazon; banks of the Rio Orinoco; Rio Tocantins and Rio Negro, Brazil.
193. Pithecia chiropotes. British Guiana; Upper Orinoco; Rio Negro and Rio Branco, Brazil; banks of the Rio Japura, Peru.

CACAJAO.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

194. CACAJAO CALVUS. Angle formed by the union of the Rios Japuri and Amazon, Brazil.
195. CACAJAO RUBICUNDUS. Forests on the north of River Amazon from Iça, on the Rio Iça, westward.
196. CACAJO MELANOCEPHALUS. Forests through which the Rio Cassiquiari, Rio Negro and Rio Branco flow.

SAIMIRI.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

197. SAIMIRI SCIUREUS. French and Dutch Guianas, Venezuela; and both banks of the Amazon and its tributaries, into Colombia.
198. SAIMIRI CASSIQUIARENSIS. Banks of the Orinoco, south of the cataracts to the Rio Cassiquiari and Rio Guaviaré; and forests of Rio Caura, above the rapids of Mura, Venezuela.
199. SAIMIRI MACRODON. Upper waters of the Amazon in Ecuador and Peru.
200. SAIMIRI MADEIRÆ. Middle Rio Madeira, Ecuador.
201. SAIMIRI USTUS. Peruvian Amazons; Bolivia.
202 SAIMIRI BOLIVIENSIS. Bolivia in the Sierras Guarayas.
203. SAIMIRI B. NIGRICEPS. Eastern Peru. Range unknown.
204. SAIMIRI ŒRSTEDI. Guatemala? to Panama, Central America.

AOTUS.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

205. AOTUS INFULATUS. Region of the Upper Amazon, Peru.
206. AOTUS NIGRICEPS. Chanchamayo, Peru.
207. AOTUS SENEX. Porzuzo, Peru.

208. Aotus rufipes. Nicaragua? Central America.
209. Aotus roberti. Matto Grosso, Brazil.
210. Aotus miriquouina. Argentine Republic, South America.
211. Aotus boliviensis. Province of Sara, Bolivia.
212. Aotus lanius. Tolima Mountains, Colombia, South America.
213. Aotus vociferans. Banks of the Rio Ucayali and Rio Huallaga, and Upper Marañon, eastern border of Peru among the mountains of Tolima.
214. Aotus griseimembra. Mountains of Santa Marta, Colombia.
215. Aotus trivirgatus. Region of the Upper Amazon.
216. Aotus oseryi. "Haute Amazone, Pérou."
217. Aotus gularis. Mouth of the Rio Chocho, on Upper Rio Napo, Ecuador.
218. Aotus microdon. Ecuador. Range unknown.
219. Aotus spixi. Range and type locality unknown.

Ateleus.

Range of the Genus.

Neotropical Region.

Range of the Species.

220. Ateleus paniscus. The Guianas; lowlands of the Lower and Upper Amazon; banks of the Rio Madeira, Rio Marmoré, Rio Guaporé, and Rio Carara, Brazil; and the Lower Rio Marañon, Peru.
221. Ateleus marginatus. Para, banks of the Tocantins, and banks of the Rio Cupari, a branch of the Rio Tapajos, Brazil; Peru.
222. Ateleus ater. Panama, Colombia and Eastern Peru.
223. Ateleus variegatus. Upper Cauca River, Venezuela; Upper Rio Negro; Province of Jean de Bracamoros, Peru.
224. Ateleus rufiventris. Panama into Colombia.
225. Ateleus grisescens. Unknown.
226. Ateleus cucullatus. Colombia?
227. Ateleus belzebuth. Banks of the Orinoco above the rapids of Aturas and Maypures.
228. Ateleus pan. Guatemala, into the State of Vera Cruz, Mexico.
229. Ateleus fuscipes. Range and type locality unknown.
230. Ateleus hybridus. Valley of the Magdalena, Colombia.
231. Ateleus geoffroyi. Costa Rica, Central America, to Colombia. South America.

BRACHYTELEUS.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

232. BRACHYTELEUS ARACHNOIDES. Cape St. Roque to Rio de Janeiro, Brazil.

LAGOTHRIX.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

233. LAGOTHRIX LAGOTRICHA. District in Upper Magdalena Valley southwest of the Rio Negro, Colombia; also in Peru.
234. LAGOTHRIX LUGENS. Mountains north of Tolima, Colombia.
235. LAGOTHRIX THOMASI. Peru.
236. LAGOTHRIX UBERICOLA. Upper Amazon, Rio Jurua, and Rio Solimoens, Peru.
237. LAGOTHRIX INFUMATA. Valley of the Rio Cotopaza, Ecuador.
238. LAGOTHRIX CANA. Mouth of the Rio Tocantins, to the forests along the Rio Solimoens.

CEBUS.

Range of the Genus.

NEOTROPICAL REGION.

Range of the Species.

239. CEBUS APELLA. English, French, and Dutch Guianas.
240. CEBUS CAPUCINUS. Nicaragua, Central America, to Colombia, South America.
241. CEBUS C. NIGRIPECTUS. Cauca Valley, Colombia.
242. CEBUS FRONTATUS. Province of Sao Paulo, Brazil.
243. CEBUS ALBIFRONS. Forests of the Orinoco and Amazon and its tributaries; Province of Minas, Peru.
244. CEBUS UNICOLOR. Forests of the Rio Teffé, Brazil.

245. Cebus u. cuscinus. Near Callanga, Province of Cuzco, Peru.
246. Cebus flavus. Bolivia. Range unknown.
247. Cebus castaneus. Cayenne.
248. Cebus variegatus. Bahia to Rio de Janeiro, Brazil.
249. Cebus malitiosus. Colombia, South America.
250. Cebus chrysopus. Colombia, South America.
251. Cebus apiculatus. Venezuela.
252. Cebus libidinosus. Province of Minas Geræs, Brazil.
253. Cebus fatuellus. Tolima, and Upper Magdalena Valley, Colombia.
254. Cebus f. peruanus. Inamberi Valley, S. E. Peru.
255. Cebus macrocephalus. Rio Negro, west of its mouth, Brazil.
256. Cebus versuta. Province of Minas Geræs, Brazil.
257. Cebus azaræ. Paraguay to Matto Grosso, Brazil; Santa Cruz de la Sierra, Bolivia?
258. Cebus a. pallidus. Bolivia. Range unknown.
259. Cebus cirrifer. Southern Brazil.
260. Cebus crassiceps. Rio Negro? Brazil.
261. Cebus caliginosus. Province of Sao Paulo, Brazil.
262. Cebus vellerosus. Brazil. Range unknown.

Lasiopygidæ.

Papio.

Range of the Genus.

Ethiopian Region.

Range of the Species.

263. Papio nigeriæ. North Nigeria, West Africa.
264. Papio doguera. Abyssinia.
265. Papio tessellatum. Uganda, East Africa.
266. Papio furax. North west of Mt. Kenia, East Africa.
267. Papio yokoensis. Middle Cameroon, West Africa.
268. Papio heuglini. Soudan, Africa.
269. Papio papio. Senegal to Angola, West Africa.
270. Papio ibeanus. East Africa.
271. Papio porcarius. South Africa, south of the River Limpopo.
272. Papio cynocephalus. Eastern and Central Africa, limits unknown.

273. Papio neumanni. Masailand, Eastern Africa, range unknown.
274. Papio strepitus. Nyassaland, East Africa.
275. Papio pruinosus. Nyassaland, East Africa.
276. Papio hamadryas. Abyssinia.
277. Papio h. arabicus. Arabia, range unknown.
278. Papio brockmani. Somaliland, and eastern Abyssinia.
279. Papio sphinx. Senegambia to the Congo, West Africa.
280. Papio planirostris. South eastern Cameroon, West Africa.
281. Papio leucophæus. North Cameroon, West Africa.

Theropithecus.

Range of the Genus.

Ethiopian Region.

Range of the Species.

282. Theropithecus gelada. Southern Abyssinia.
283. Theropithecus obscurus. Southern Abyssinia.

Cynopithecus.

Range of the Genus.

Australian Region.

Range of the Species.

284. Cynopithecus niger. Northern and western coasts of the Island of Celebes; and Island of Batchian.

Magus.

Range of the Genus.

Australian Region.

Range of the Species.

285. Magus maurus. Southwestern peninsula of the Island of Celebes; Aru Islands.
286. Magus ochreatus. Southwestern peninsula of Celebes; Islands of Muna, and Buton.
287. Magus tonkeanus. Middle eastern peninsula of Celebes.

SIMIA.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

288. SIMIA SYLVANUS. Morocco and Algeria, North Africa. Introduced on Rock of Gibraltar.

PITHECUS.

Range of the Genus.

ORIENTAL AND PALÆARCTIC REGIONS.

Range of the Species.

289. PITHECUS SPECIOSUS. Upper Burma, Upper Assam, Kakhyen Hills, Cochin China, Borneo.
290. PITHECUS HARMANDI. Mountains between Siam and Cambogia.
291. PITHECUS RUFESCENS. Tenasserim. Range unknown.
292. PITHECUS FUSCATUS. Islands of Yakushima and Nippon, to 41° North Latitude, Japan.
293. PITHECUS THIBETANUM. Mountains of Moupin, Thibet.
294. PITHECUS VESTITUS. Mountains of Setchuen, China; to Tengri-Nor in Batang, Thibet.
295. PITHECUS SANCTI-JOHANNIS. North Lena Island; Island of Hong Kong; China.
296. PITHECUS LASIOTIS. Provinces of Setchuen and Tché-li, China.
297. PITHECUS PAGENSIS. South Pagi Island, west of Sumatra.
298. PITHECUS VILLOSUS. Cashmere.
299. PITHECUS LITTORALIS. Province of Fukein, China.
300. PITHECUS CYCLOPSIS. Island of Formosa.
301. PITHECUS NEMESTRINUS. Southern Burma, Tenasserim, Malay Peninsula; and Islands of Banka, Sumatra, Java and Borneo.
302. PITHECUS ADUSTUS. Tenasserim.
303. PITHECUS INSULANUS. Mergui Archipelago.
304. PITHECUS ANDAMANENSIS. Arakan; Valley of the Irawady; Upper Burma; Siam. Introduced into Andaman Islands.

305. Pithecus assamensis. Himalaya Mountains from Masuri; Assam; Mishmi Hills; and Upper Burma; Irawady 25 miles below Bhamo; Bengal Sunderbunds east of Calcutta; Sikhim; Bhutan.
306. Pithecus rhesus. Himalayas to the Godaveri River, Northern India; Cashmere; Jako Hill, Simla; Nepal; Guzerat; Central Provinces; in Bengal and Northern Circars; and near Bombay on the west coast.
307. Pithecus brevicaudus. Island of Hainan.
308. Pithecus albibarbatus. Southern India; the western Ghats below Goa, to Cape Comorin.
309. Pithecus sinicus. Southern India; north to the Godaveri River, and west to Bombay.
310. Pithecus pileatus. Island of Ceylon.
311. Pithecus resimus. Island of Java.
312. Pithecus validus. Cochin China.
313. Pithecus alacer. Island of Koendoer.
314. Pithecus karimoni. Karimon Island.
315. Pithecus fuscus. Islands of Simalur and Lasia.
316. Pithecus umbrosus. Little Nicobar Island.
317. Pithecus irus. Burma, Arakan, Tenasserim.
318. Pithecus mordax. Island of Java.
319. Pithecus fascicularis. Islands of Sumatra, Terrutau, and Langkawi.
320. Pithecus mandibulars. Sungei Sama near Pontianak, Borneo.
321. Pithecus capitalis. Lower Siam; and Telibon Island.
322. Pithecus lætus. Island of Tringi, South China Sea.
323. Pithecus lingungensis. Lingung Island, Natuna Group.
324. Pithecus lautensis. Laut Island, Natuna Group.
325. Pithecus sirhassenensis. Sirhassen Island, Natuna Group.
326. Pithecus vitiis. Domel, St. Matthew, and Sullivan Islands, Mergui Archipelago.
327. Pithecus carimatæ. Carimata Islands.
328. Pithecus baweanus. Bawean Island, Javan Sea.
329. Pithecus cupidus. Mata Siri Island, Javan Sea.
330. Pithecus agnatus. Tuang Ku Island; Banjak Island.
331. Pithecus phæurus. Nias Island.
332. Pithecus lapsus. Island of Banka.
333. Pithecus lingae. Linga Island, Rhio Archipelago.
334. Pithecus impudens. Sugi Island, Rhio Archipelago.
335. Pithecus bintangensis. Islands of Bintang, and Batam.

336. Pithecus dollmani. Island of Singapore.
337. Pithecus philippinensis. Islands of Luzon, and Mindanao, Philippine Archipelago.
338. Pithecus p. apoensis. Island of Mindanao, Philippine Archipelago.
339. Pithecus cagayanus. Island of Sulu.
340. Pithecus pumilus. Bunoa Island, Tambelan Islands.
341. Pithecus suluensis. Island of Sulu.

Cercocebus.

Range of the Genus.

Ethiopian Region.

Range of the Species.

342. Cercocebus torquatus. Nigeria; Cameroon; and French Congo, West Africa.
343. Cercocebus æthiops. Sierra Leone; and Liberia; West Africa.
344. Cercocebus lunulatus. Gold Coast, West Africa.
345. Cercocebus chrysogaster. Upper Congo.
346. Cercocebus hagenbecki. "Upper Congo."
347. Cercocebus agilis. French Congo.
348. Cercocebus galeritus. Tana River, East Africa.
349. Cercocebus albigena. Congo Free State, West Africa; to Victoria Nyanza.
350. Cercocebus a. johnstoni. Central Africa; Uganda to West Africa, Uganda, and Lake Mweru to Upper Congo.
351. Cercocebus a. zenkeri. Bifindi on Lukenye River, Cameroon, West Africa.
352. Cercocebus aterrimus. Basin of Central Congo.

Rhinostigma.

Range of the Genus.

Ethiopian Region.

Range of the Species.

353. Rhinostigma hamlyni. Ituri forest, Congo State.

LASIOPYGA.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

354. LASIOPYGA L'HOESTI. Locality unknown.
355. LASIOPYGA INSOLITA. Northern Nigeria.
356. LASIOPYGA PETAURISTA. Guinea, West Africa.
357. LASIOPYGA FANTIENSIS. Gold Coast, West Africa.
358. LASIOPYGA ERYTHROGASTER. West Africa, locality unknown.
359. LASIOPYGA BUTTIKOFERI. Liberia, West Africa.
360. LASIOPYGA ASCANIUS. Congo to Angola, West Africa.
361. LASIOPYGA A. WHITESIDEI. Central Congo.
362. LASIOPYGA SIGNATA. Banana, West Africa.
363. LASIOPYGA SCHMIDTI. Uganda, and Upper Congo.
364. LASIOPYGA LEUCAMPYX. Angola, and the Congo, West Africa.
365. LASIOPYGA PLUTO. Angola, West Africa.
366. LASIOPYGA NIGRIGENIS. West Africa.
367. LASIOPYGA BOUTOURLINI. Abyssinia, N. E. Africa.
368. LASIOPYGA OPISTHOSTICTA. British Central Africa.
369. LASIOPYGA AURORA. East Africa.
370. LASIOPYGA STUHLMANNI. Lake Albert Edward, to the Mpanga forest.
371. LASIOPYGA NEUMANNI. German East Africa.
372. LASIOPYGA DOGGETTI. Uganda, East Africa.
373. LASIOPYGA PRINCEPS. Eastern Congo State, Central Africa.
374. LASIOPYGA CARRUTHERSI. Uganda, East Africa.
375. LASIOPYGA NICTITANS. Cameroon and French Congo, West Africa.
376. LASIOPYGA N. LAGLAIZI. Gaboon, West Africa.
377. LASIOPYGA STICTICEPS. Central Africa.
378. LASIOPYGA MARTINI. Guinea, to the French Congo, West Africa.
379. LASIOPYGA CEPHUS. Gaboon, to the Congo, West Africa.
380. LASIOPYGA CEPHODES. Gaboon, West Africa.
381. LASIOPYGA INOBSERVATA. West Africa, locality unknown.
382. LASIOPYGA SCLATERI. Nigeria, West Africa.
383. LASIOPYGA ERYTHROTIS. Island of Fernando Po.
384. LASIOPYGA MATSCHIE. Abyssinia.
385. LASIOPYGA HILGERTI. Galla country, Abyssinia.

386. Lasiopyga djamdjamensis. East of Lake Abaya, Abyssinia.
387. Lasiopyga tantalus. Nigeria.
388. Lasiopyga t. budgetti. Uganda, East Africa.
389. Lasiopyga t. griseisticta. Lake Albert to the Welle River, East Africa.
390. Lasiopyga t. alexandri. Lake Chad, Nigeria, West Africa.
391. Lasiopyga callitrichus. Senegambia to the Niger, West Africa.
392. Lasiopyga werneri. Locality unknown.
393. Lasiopyga griseo-viridis. Soudan, Abyssinia.
394. Lasiopyga cynosura. Congo State, West Africa.
395. Lasiopyga pygerythra. Cape Colony to Mount Kilimanjaro, and Mombassa; East Africa.
396. Lasiopyga rufoviridis. Mozambique, East Africa.
397. Lasiopyga rubella. British East Africa.
398. Lasiopyga callida. Lake Naivasha, British East Africa.
399. Lasiopyga centralis. Uganda, British East Africa, Abyssinia.
400. Lasiopyga c. whytei. Nyassaland to Mozambique, East Africa.
401. Lasiopyga c. johnstoni. Mt. Kilimanjaro, German East Africa.
402. Lasiopyga c. lutea. S. W. of Mt. Kenia, British East Africa.
403. Lasiopyga silacea. Angoniland, N. W. Rhodesia, East Africa.
404. Lasiopyga nigroviridis. Upper Congo.
405. Lasiopyga mona. Gold Coast to Cameroon, West Africa.
406. Lasiopyga denti. Ituri forest, Congo State.
407. Lasiopyga wolfi. French Congo, West Africa.
408. Lasiopyga campbelli. Sierra Leone, West Africa.
409. Lasiopyga burnetti. Gold Coast to Cameroon; Island of Fernando Po; West Africa.
410. Lasiopyga pogonias. Island of Fernando Po; Gaboon to French Congo; West Africa.
411. Lasiopyga p. nigripes. Goboon, West Africa.
412. Lasiopyga grayi. Southern Cameroon to River Congo; West Africa.
413. Lasiopyga g. pallida. Gaboon, West Africa.
414. Lasiopyga petronellæ. Upper Congo.
415. Lasiopyga albitorquata. Unknown.
416. Lasiopyga kolbi. Mt. Kenia, British East Africa.
417. Lasiopyga k. nubila. Nairobi forest, British East Africa.
418. Lasiopyga k. hindei. Kenia district, British East Africa.
419. Lasiopyga albigularis. East Africa, Mombassa to Transvaal.
420. Lasiopyga a. beirensis. Beira, Southeast Africa.

421. Lasiopyga a. kinobotensis. Mt. Kilimanjaro, German East Africa.
422. Lasiopyga a. rufilata. Rufigi River, German East Africa.
423. Lasiopyga moloneyi. Masuku Plateau, Nyassaland; Portuguese East Africa.
424. Lasiopyga francescæ. Nyassaland, East Africa.
425. Lasiopyga preussi. Cameroon, West Africa.
426. Lasiopyga p. insularis. Island of Fernando Po, West Africa.
427. Lasiopyga thomasi. Lake Kivu, German East Africa.
428. Lasiopyga kandti. Lake Kivu, German East Africa.
429. Lasiopyga insignis. Congo forest, Central Africa.
430. Lasiopyga stairsi. Zambesi Delta, Mozambique, East Africa.
431. Lasiopyga s. mosambicus. Mozambique, East Africa.
432. Lasiopyga rufitincta. Mombassa? British East Africa.
433. Lasiopyga labiata. Mozambique, East Africa; and Natal to Angola, West Africa.
434. Lasiopyga neglecta. White Nile, East Africa; locality unknown.
435. Lasiopyga brazzæ. French Congo, West Africa.
436. Lasiopyga diana. Liberia, West Africa.
437. Lasiopyga roloway. Gold Coast, West Africa.
438. Lasiopyga temmincki. Guinea? West Africa.

Miopithecus.

Range of the Genus.

Ethiopian Region.

Range of the Species.

439. Miopithecus talapoin. Southern Cameroon to Gaboon, West Africa.
440. Miopithecus ansorgei. Angola, West Africa.

Erythrocebus.

Range of the Genus.

Ethiopian Region.

Range of the Species.

441. Erythrocebus patas. Senegal, West Africa.
442. Erythrocebus pyrrhonotus. Kordofan, Dafur, and Sennaar, Northeast Africa.

443. ERYTHROCEBUS FORMOSUS. Uganda.
444. ERYTHROCEBUS POLIOPHÆUS. Abyssinia; Bahr el Ghazal, Soudan.
445. ERYTHROCEBUS WHYTEI. Guas Ngishu Plateau, British East Africa.
446. ERYTHROCEBUS KERSTINGI. Togoland, West Africa.
447. ERYTHROCEBUS ZECHI. Togoland, West Africa.
448. ERYTHROCEBUS LANGELDI. Cameroon, West Africa.
449. ERYTHROCEBUS ALBIGENIS. Egyptian Soudan, East Africa.
450. ERYTHROCEBUS SANNIO. Lake Chad, Nigeria.
451. ERYTHROCEBUS BAUMSTARKI. Masailand, East Africa.
452. ERYTHROCEBUS CIRCUMCINCTUS. Locality unknown.

PYGATHRIX.

Range of the Genus.

PALÆARCTIC AND ORIENTAL REGIONS.

Range of the Species.

453. PYGATHRIX MELANOLOPHA. Island of Sumatra.
454. PYGATHRIX NOBILIS. Island of Sumatra; locality unknown.
455. PYGATHRIX RUBICUNDA. Northern to South eastern Borneo.
456. PYGATHRIX CARIMATÆ. Telok Edar, Karimata Islands.
457. PYGATHRIX FRONTATA. South eastern Borneo.
458. PYGATHRIX NUDIFRONS. North west Borneo.
459. PYGATHRIX CRUCIGER. Western Borneo.
460. PYGATHRIX CHRYSOMELAS. Western Borneo.
461. PYGATHRIX SUMATRANA. Ophir Mountain, Sumatra
462. PYGATHRIX BATUANA. Batu Islands.
463. PYGATHRIX PERCURA. Eastern Sumatra.
464. PYGATHRIX FEMORALIS. Tenasserim, Malay Peninsula, and Sumatra.
465. PYGATHRIX MELAMERA. North Burma.
466. PYGATHRIX BARBEI. Province of Ye, Tenasserim, Malay Peninsula.
467. PYGATHRIX HOLOTEPHREA. Locality unknown.
468. PYGATHRIX PHAYREI. Arakan; probably northern Tenasserim.
469. PYGATHRIX FLAVICAUDA. Trong, Lower Siam.
470. PYGATHRIX ROBINSONI. Trong, Northern Malay Peninsula.
471. PYGATHRIX OBSCURA. Tenasserim, Malay Peninsula.

472. Pygathrix carbo. Turutau, and Lankawi Islands, Straits of Malacca.
473. Pygathrix sanctorum. St. Matthew Island, Mergui Archipelago.
474. Pygathrix nubigena. Southern Malacca.
475. Pygathrix dilecta. Selangore, Malacca.
476. Pygathrix natunæ. Island of Natuna.
477. Pygathrix rhionis. Bitang Island, Rhio Archipelago.
478. Pygathrix cana. Kundur Island, Rhio Archipelago
479. Pygathrix siamensis. Siam.
480. Pygathrix catemana. Eastern Sumatra.
481. Pygathrix aygula. Island of Java.
482. Pygathrix fusco-murina. South Sumatra.
483. Pygathrix sabana. North Borneo.
484. Pygathrix everetti. Mt. Kina-Balu, Borneo.
485. Pygathrix hosei. North west coast of Borneo.
486. Pygathrix thomasi. Langkat district, north east Sumatra.
487. Pygathrix potenziani. Mettawee Islands.
488. Pygathrix françoisi. Boundary between Tonkin and China.
489. Pygathrix cephaloloptera. Island of Ceylon.
490. Pygathrix c. monticola. Island of Ceylon.
491. Pygathrix senex. Island of Ceylon.
492. Pygathrix johni. Nilgiri Hills to Travancore; Western Ghats to Cape Comorin, India.
493. Pygathrix ursina. Southern Ceylon.
494. Pygathrix aurata. Island of Java.
495. Pygathrix cristata. Island of Sumatra.
496. Pygathrix c. pullata. Islands of the Rhio Archipelago; and Island of Banka.
497. Pygathrix ultima. Mt. Dulit, Borneo.
498. Pygathrix margarita. Annam.
499. Pygathrix germaini. Cochin China.
500. Pygathrix crepuscula. Mooleyit, British Burma.
501. Pygathrix c. wroughtoni. Siam.
502. Pygathrix entellus. Part of the Gangetic Provinces; the Dukhun, and the Carnatic to the Malabar coast, south western Bengal; Central Provinces; Bombay, Guzerat; Southern Rajputana, and part of the North west Provinces to Kattywar, and probably to Cutch, but not to Sind or the Punjaub.
503. Pygathrix albipes. Island of Luzon; Philippine Archipelago.

504. Pygathrix schistaceus. Cashmere to Bhutan; Himalaya Mountains.
505. Pygathrix lania. Chumbi, Thibet.
506. Pygathrix pileata. Assam, Sylhet, Tipperah, Chittagong, northern Arakan, and part of Upper Burma.
507. Pygathrix hypoleuca. Malabar coast to Cape Comorin, 12,000 feet elevation.
508. Pygathrix priamus. Nellore, to the Coromandel coast; the Carnatic, the Wynaad, and eastern slopes of the Nilgiri Hills up to 6,000 feet; and northern Ceylon, to the Kandyan Hills in the south.
509. Pygathrix nemæus. Cochin China; and the Island of Hainan.
510. Pygathrix nigripes. Saigon, and mouth of the Mékong River, Cochin China.

Rhinopithecus.

Range of the Genus.

Palæarctic Region.

Range of the Species.

511. Rhinopithecus roxellanæ. Northwestern China to Kokonoor, and Konsu Kinsu, Northwestern Setchuen.
512. Rhinopithecus bieti. Chinese Province of Yunnan.
513. Rhinopithecus brelichi. Van Gin Shan range of mountains north of the Province of Kwsi-chow, Central China.
514. Rhinopithecus avunculus. Yen-Bay, Tonkin.

Simias.

Range of the Genus.

Oriental Region.

Range of the Species.

515. Simias concolor. South Pagi Island; west of Sumatra.

Nasalis.

Range of the Genus.

Oriental Region.

Range of the Species.

516. Nasalis larvatus. Island of Borneo.

COLOBUS.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

517. COLOBUS VERUS. Liberia; forests of Fantee, and Ashantee, West Africa.
518. COLOBUS RUFOMITRATUS. Forests of the Muriuni near Mombassa, East Africa.
519. COLOBUS TEPHROSCELES. Mt. Ruwenzori, Uganda, East Africa.
520. COLOBUS NIGRIMANUS. Liranga, banks of the Congo, Central Africa.
521. COLOBUS ELLIOTI. Lake Albert Edward, British East Africa.
522. COLOBUS PREUSSI. Cameroon, West Africa.
523. COLOBUS KIRKI. Island of Zanzibar.
524. COLOBUS BOUVIERI. Forests of Gambia; Casamanca; Gaboon; and Congo, West Africa.
525. COLOBUS THOLLONI. Congo State. Range unknown.
526. COLOBUS TEMMINCKI. Locality unknown.
527. COLOBUS ——— ? West of Lake Albert, Congo State, Central Africa.
528. COLOBUS FOAI. South west of Lake Tanganyika, Congo State, Central Africa.
529. COLOBUS GRAUERI. Congo State, Central Africa.
530. COLOBUS OUSTALETI. Congo State, Central Africa.
531. COLOBUS FERRUGINEUS. Liberia, West Africa.
532. COLOBUS FULIGINOSUS. Gambia, West Africa.
533. COLOBUS RUFONIGER. Sierra Leone, Liberia?, West Africa.
534. COLOBUS PENNANTI. Gaboon; Island of Fernando Po; West Africa.
535. COLOBUS GODONORUM. German East Africa.
536. COLOBUS SATANAS. Senegambia, to French Congo; Island of Fernando Po; West Africa.
537. COLOBUS RUWENZORI. Mt. Ruwenzori, Uganda, British East Africa.
538. COLOBUS VELLEROSUS. Senegambia, to the Gold Coast; West Africa.
539. COLOBUS POLYCOMUS. Sierra Leone, to Liberia, West Africa.

540. Colobus palliatus. North of Lake Nyassa, German East Africa.
541. Colobus sharpei. Ituri forest in Congo State, to Nyassaland, East Africa.
542. Colobus angolensis. Left bank of Congo to Angola, West Africa.
543. Colobus abyssinicus. Abyssinia.
544. Colobus occidentalis. Uganda to Victoria Nyanza; Upper and Lower Congo; Lake Chad; Nigeria, West Africa.
545. Colobus poliurus. Omo River, Abyssinia.
546. Colobus caudatus. Mt. Kenia, British East Africa; Uganda, Unyamwezi, south east of Victoria Nyanza, and Mount Kilimanjaro, German East Africa.
547. Colobus gallarum. Galla country; Abyssinia.

Hylobatidæ.

Hylobates.

Range of the Genus.

Oriental Region.

Range of the Species.

548. Hylobates nasutus. Cochin China; Island of Hainan.
549. Hylobates hoolock. Assam, Arakan, Upper Burma, and Kakhyen Hills.
550. Hylobates lar. Range between Pegu, and Arakan; Tenasserim.
551. Hylobates henrici. Tonkin, near border of Yunnan.
552. Hylobates leucogenys. Siam.
553. Hylobates gabrielli. Annam.
554. Hylobates leuciscus. Island of Java.
555. Hylobates agilis. Island of Sumatra.
556. Hylobates pileatus. Cambogia; Siam; Cochin China.
557. Hylobates concolor. Borneo.
558. Hylobates funereus. Islands of Sulu Archipelago?
559. Hylobates fuscus. Locality unknown.

SYMPHALANGUS.

Range of the Genus.

ORIENTAL REGION.

Range of the Species.

560. SYMPHALANGUS SYNDACTYLUS. Sumatra.
561. SYMPHALANGUS S. CONTINENTIS. Selangore, Malay Peninsula.
562. SYMPHALANGUS KLOSSI. South Pagi Island, west of Sumatra.

PONGIIDÆ.

PONGO.

Range of the Genus.

ORIENTAL REGION.

Range of the Species.

563. PONGO PYGMÆUS. Borneo; Sumatra?
564. PONGO ABELII. (if distinct). Sumatra.

GORILLA.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

565. GORILLA GORILLA. Gaboon, West Africa.
566. GORILLA G. MATSCHIE. Southern Cameroon, West Africa.
567. GORILLA G. ——— ? MOKBE. Southern Cameroon, West Africa.
568. GORILLA G. DIEHLI. Northern Cameroon, West Africa.
569. GORILLA G. JACOBI. Southern Cameroon, West Africa.
570. GORILLA G. ——— ? UPPER OGOWÉ. Gaboon, West Africa.
571. GORILLA G. CASTANEICEPS. French Congo, West Africa.
572. GORILLA G. ——— ? MBIAWE. South Cameroon, West Africa.
573. GORILLA BERINGERI. Kirunga, German East Africa.

PSEUDOGORILLA.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

574. PSEUDOGORILLA MAYEMA? Congo forest.

PAN.

Range of the Genus.

ETHIOPIAN REGION.

Range of the Species.

575. PAN CALVUS. Southern Cameroon, and Gaboon, West Africa.
576. PAN FULIGINOSUS. French Congo, West Africa.
577. PAN SATYRUS. Gaboon, West Africa.
578. PAN KOOLOO-KAMBA. Cameroon, and Gaboon, West Africa.
579. PAN LEUCOPRYMNUS. "Coast of Guinea"; West Africa.
580. PAN CHIMPANSE. Gambia, West Africa.
581. PAN ——— ? BASHO. Northwestern Cameroon, West Africa.
582. PAN SCHWEINFURTHI. Soudan; south to west shore of Lake Tanganyika; Congo State; Central Africa.
583. PAN S. MARUNGENSIS. Vicinity of the Albert Nyanza, and in the Congo forest.
584. PAN ——— ? DUNNE. Southern Cameroon.
585. PAN AUBRYI. Cameroon and Gaboon, West Africa.
586. PAN ——— ? LOMIE. Interior of Cameroon, West Africa.
587. PAN VELLEROSUS. Cameroon, West Africa.
588. PAN FUSCUS. Locality unknown.

From the foregoing it will be observed that the Ethiopian Region contains the largest number of genera of the Primates, viz.: twenty-five, the Neotropical Region next with fourteen, then the Oriental Region with nine, the Palæarctic Region three, and the Australian Region with three. All the species of LEMUROIDEA excepting the species of DAUBENTONIA, TARSIUS, LORIS and NYCTICEBUS, are natives of the Ethiopian Region. Of the genera of the ANTHROPOIDEA two are common to two of the Zoogeographical Regions, viz.: PITHECUS and PYGATHRIX which are represented by species in the eastern portion of the Palæarctic Region and generally, (more particularly as regards the first genus), in the Oriental Region, and one, TARSIUS, has species in both the Oriental and Australian Regions. All other genera have their members confined to one Region only.

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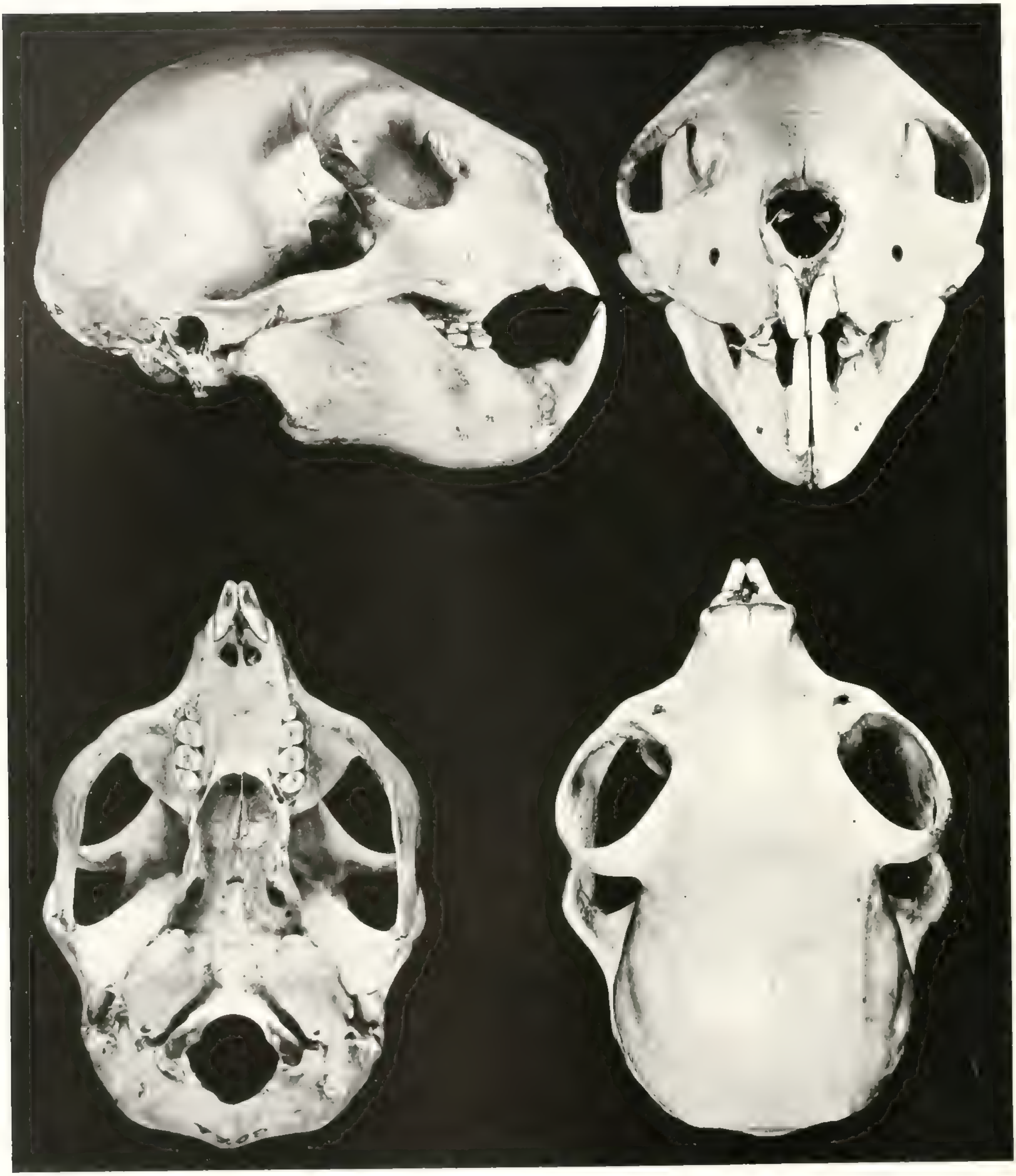
ERRATA.

The family name of the Anthropoid Apes has been consistently misspelled wherever it appears in this work, and the error was detected too late to correct it on the earlier pages. It was then decided, as it is found in comparatively few places, to continue it as a uniform error and call attention to it here.

The premier genus of the Great Apes is Pongo, and the family name Pongidæ, not Pongiidæ. This is in accordance with the custom which has caused the acceptance of the subfamily name of the species of the genera GALAGO and HEMIGALO—GALAGINÆ. On the other hand, if it is deemed desirable to consider this barbarous name as a Latin word with a genitive case, then, of course, the family name would be *Pongonidæ*.

There is, however, no rule, known to the author, incorporated in any code, which regulates the formation of native or barbarous words that properly are not declinable, have really no genitive case, or in some cases are not even in Latin form, and have never been adopted in the Latin language.

A REVIEW
OF THE PRIMATES



DAUBENTONIA MADAGASCARIENSIS.

No. 302a Col. Physicians and Surgeons Col., London. Twice Nat. Size.

CLASS MAMMALIA.

ORDER PRIMATES. PRIMATES.

SUBORDER 1. LEMUROIDEA.

FAMILY 1. DAUBENTONIIDÆ.

GENUS 1. DAUBENTONIA. THE AYE-AYE.

$$\text{I. } \frac{1-1}{1-1}; \quad \text{C. } \frac{0-0}{0-0}; \quad \text{P. } \frac{1-1}{1-1}; \quad \text{M. } \frac{3-3}{3-3} = 20.$$

DAUBENTONIA E. Geoff., Decad. Philos. et Litt., 1795, p. 195. Type *Sciurus madagascariensis* Gmelin.

Scolecophagus E. Geoff., Decad. Philos. et Litt., 1795, p. 196.
Aye-Aye Lacépède, Tabl. Mamm., 1799, p. 6.
Cheiromys G. Cuv., Leçons Anat. Comp., I, 1800.
Psilodactylus Oken, Lehrb. Naturg., 1816, 3ter, Theil, Zool., 2te Abth., pp. IX, 1164-5.
Myspithecus Blainv., Ostéog. Mamm., I, 1839, fasc. III, p. 33, (nec Cuvier).
Myslemur Blainv., Dict. Univ. Hist. Nat., VIII, 1846, p. 559.

Head round; muzzle short; eyes round, with bristly brows; nictitating membrane present; ears large, rounded, inclined backwards, naked, with numerous protuberances; tail long, bushy; legs longer than arms; fingers long, claws compressed, pointed; third finger very slender, attenuate; thumb and great toe opposable, placed at an angle to the other digits; teats two, abdominal. Skull: braincase arched; muzzle short; halves of mandible independent, united at an acute angle by elastic tissue. Incisors large, curved, enamelled in front only; canines wanting; diastema present before first premolar which is much smaller than the molars; molars with flat crowns, tubercles indistinct.

DAUBENTONIA MADAGASCARIENSIS (Gmelin).

Aye-Aye Sonner., Voy. Ind., II, 1782, p. 138, t. 76; Ellis, Madag., 1858, p. 153; Bartl., Proc. Zool. Soc. Lond., 1862, p. 222; *Id.* Ann. Mag. Nat. Hist., XII, 1863, Ser. 3, p. 72; XVI, 1865, Ser. 3, p. 142.

Sciurus madagascariensis Gmel., Syst. Nat., I, 1788, p. 152, No. 29.

Daubentonia madagascariensis E. Geoff., Decad. Philos. et Litt., IV, 1795, p. 195; Dahlb., Stud. Zool. Fam. Reg. Natur. Anim., 1856, p. 236, t. 12; Gray, Proc. Zool. Soc. Lond., 1863, p. 151; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 97; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 334; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 522, fig. LXXX, Zool. Ser.

Lemur psilodactylus Shaw, Gen. Zool., 1800, p. 109.

Tarsius daubentoni Shaw, Gen. Zool., 1800, p. 114; Fisch., Anat. Maki, 1804, p. 37; Fitzing., Sitzungsb. Meth. Naturg. Akad. Wissen. Wien, 1870, p. 1756.

Cheiromys madagascariensis E. Geoff., Cat. Mamm., Mus. Hist. Nat. Paris, 1803, p. 181; Temm., Mon. Mamm., 1820, p. 106; I. Geoff., Cat. Primates, 1851, p. 85; Ellis, Madag., 1858, p. 144, fig.; Owen, Trans. Zool. Soc. Lond., V, 1862, p. 133, pls. XIV-XXVI; Peters, Abhandl. k. Akad. Wiss. Berlin, 1865, p. 79; Forbes, Handb. Primates, I, 1894, p. 14.

Lemur psilodactylus Blainv., Ostéog., 1841, Atl., Lemur V.

Otolicnus madagascariensis van d. Hoev., Tijdsch. Natuur. Gesch. Phys., 1814, p. 43.

Chiromys madagascariensis Forsyth-Major, Proc. Zool. Soc. Lond., 1901, p. 131; Shaw, Proc. Zool. Soc. Lond., 1883, p. 44.

AYE-AYE.

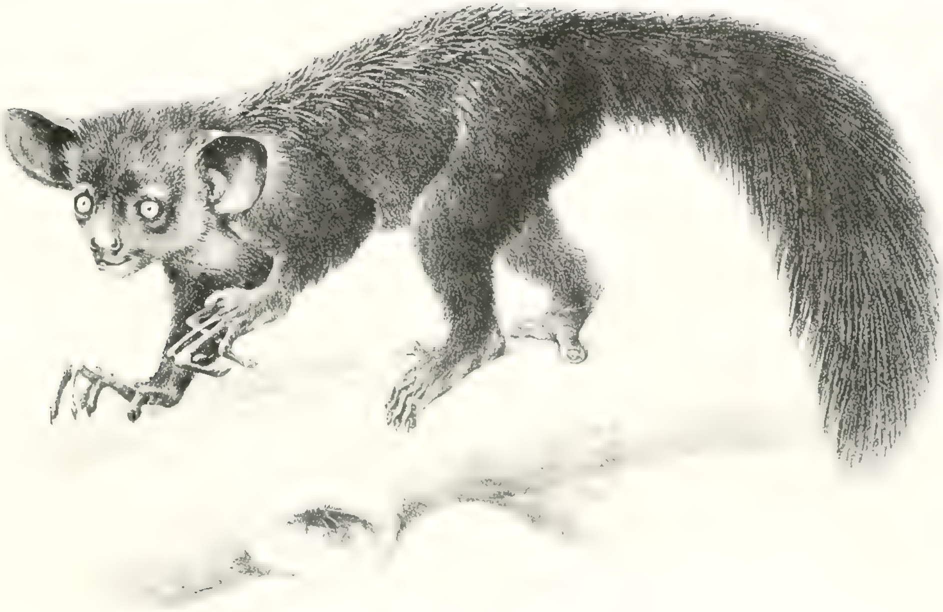
Type locality. Island of Madagascar.

Geogr. Distr. Island of Madagascar on east coast from Bay of Antongil to Mahanoro.

Color. General color black, the white basal half of the hairs showing; nose, spots over eyes, cheeks, chin, throat, neck in front and on sides yellowish white; tail very long, bushy, black; hands and feet, black.

Measurements. Total length, about 875; tail, 475. Skull: occipitonasal length, 83; Hensel, 65; zygomatic width, 61; intertemporal width, 35; palatal length, 28; breadth of braincase, 45; median length of nasals, 15; length of upper molar series, 13; length of mandible, 38; length of lower molar series, 12.

This extraordinary little animal, possessing characters both of the Rodentia and Quadrumana, and known popularly as the 'Aye-Aye,' was first discovered by Sonnerat during his visit to the Island of Madagascar. The name it bears was suggested to Sonnerat by the exclamation "Aye-Aye" of the natives who accompanied him, and



DAUBENTONIA MADAGASCARIENSIS.

who then saw the creature for the first time. Its discoverer had a male and female alive on his ship where they lived for two months, subsisting on cooked rice. A skin was brought to Paris and presented to Buffon and was deposited in the Museum of the Jardin des Plantes. Buffon considered it allied to the Squirrels, and also that it had some relation to the Tarsier (TARSIUS—?). Gmelin placed it in the genus *Sciurus* and was followed by Cuvier, who however recognized the fact that while the teeth were those of a rodent, the head was very similar to that of the Quadrumana. Illiger associated it with TARSIUS and GALAGO; and Owen in his masterly treatise on the 'Aye-Aye' (l. c.) sums up its position as "related by affinity to the Quadrumana, and by analogy to the Rodentia." It is now generally conceded to be the sole representative of a distinct family of the Lemuroidea.

It is remarkable for various peculiarities such as the nictitating membrane of the eye, the naked ears studded with small protuberances, the attenuated and wirelike middle finger, and the opposable thumb and great toe. The fingers and toes are furnished with compressed pointed claws, excepting the great toe, which has a flat nail and is placed at a right angle to the other toes. The tail is long and bushy and is employed as a covering when the animal is sleeping. Teats two, abdominal. The *os planum* of the ethmoid not perceptible.

Hon. H. Sandwith, when Colonial Secretary in the Mauritius, obtained an example of the 'Aye-Aye' from Madagascar and exhibited it in spirits to Prof. Owen, and this was the first specimen received in England. In a letter to Prof. Owen, Dr. Sandwith says of this animal, which he kept for some time in captivity, "I observe he is sensitive to cold, and likes to cover himself up in a piece of flannel, although the thermometer is now often 90° in the shade. On receiving him from Madagascar, I was told he ate bananas, so of course I fed him on them, but tried him on other fruit. I found he liked dates, which was a grand discovery, supposing he be sent alive to England. Still I thought that those strong rodent teeth, as large as those of a young beaver, must have been intended for some other purpose than that of trying to eat his way out of a cage, the only use he seemed to make of them, beside masticating soft fruits. Moreover he had other peculiarities, e. g., singularly large naked ears, directed forwards, as if for offensive rather than defensive purposes; then again, the second finger of the hand is unlike anything but a monster supernumerary member, it being slender and long, half the thickness of the other fingers, and resembling a piece of bent wire. Excepting the head and this finger he closely resembled a lemur. Now, as he attacked every night the woodwork of his cage, which I was gradually lining with tin I bethought myself of tying some sticks over the woodwork, so that he might gnaw these instead. I had previously put in some large branches for him to climb upon; but the others were straight sticks to cover over the woodwork of his cage, which he alone attacked. It so happened that the thick sticks I now put into his cage were bored in all directions by a large and destructive grub, called here the Montouk. Just at sunset the Aye-Aye crept from under his blanket, yawned, stretched, and betook himself to his tree, where his movements are lively and graceful, though by no means so quick as those of a Squirrel. Presently he came to one of the worm-eaten branches, which he began to examine most attentively; and bending forward his ears, and applying his nose close to the bark, he rapidly tapped the surface with the curious second digit, as a Woodpecker taps a tree, though with much less noise, from time to time inserting the end of the slender finger into the worm-holes as a surgeon would a probe. At length he came to a part of the branch which evidently gave out an interesting sound, for he began to tear it with his strong teeth. He rapidly stripped off the bark, cut into the wood, and exposed the nest of a grub, which he daintily picked out of its bed with the slender tapping finger, and conveyed the luscious morsel to his mouth. I watched these proceedings with much interest, and was much struck with the marvellous adaptation of the creature to its habits, shown by his acute hearing, which enables him aptly to distinguish the different tones emitted from the wood by his gentle tapping; his evidently acute sense of smell, aiding him in his search; his secure footsteps on the slender branches, to which he firmly clung by his quadrumanous members; his strong rodent teeth enabling him to tear through the wood; and lastly by the curious slender finger, unlike that of any other animal, and which he used alternately as a pleximeter, a probe, and a scoop.

"But I was yet to learn another peculiarity. I gave him water to drink in a saucer, on which he stretched out a hand, dipped a finger into it, and drew it obliquely through his open mouth; and this he repeated so rapidly, that the water seemed to flow into his mouth. After a while he lapped like a cat, but his first method of drinking appeared to me to be his way of reaching water in the deep clefts of trees.

"I am told that the Aye-Aye is an object of veneration in Madagascar, and that if any native touches one, he is sure to die within the year; hence the difficulty of obtaining a specimen."

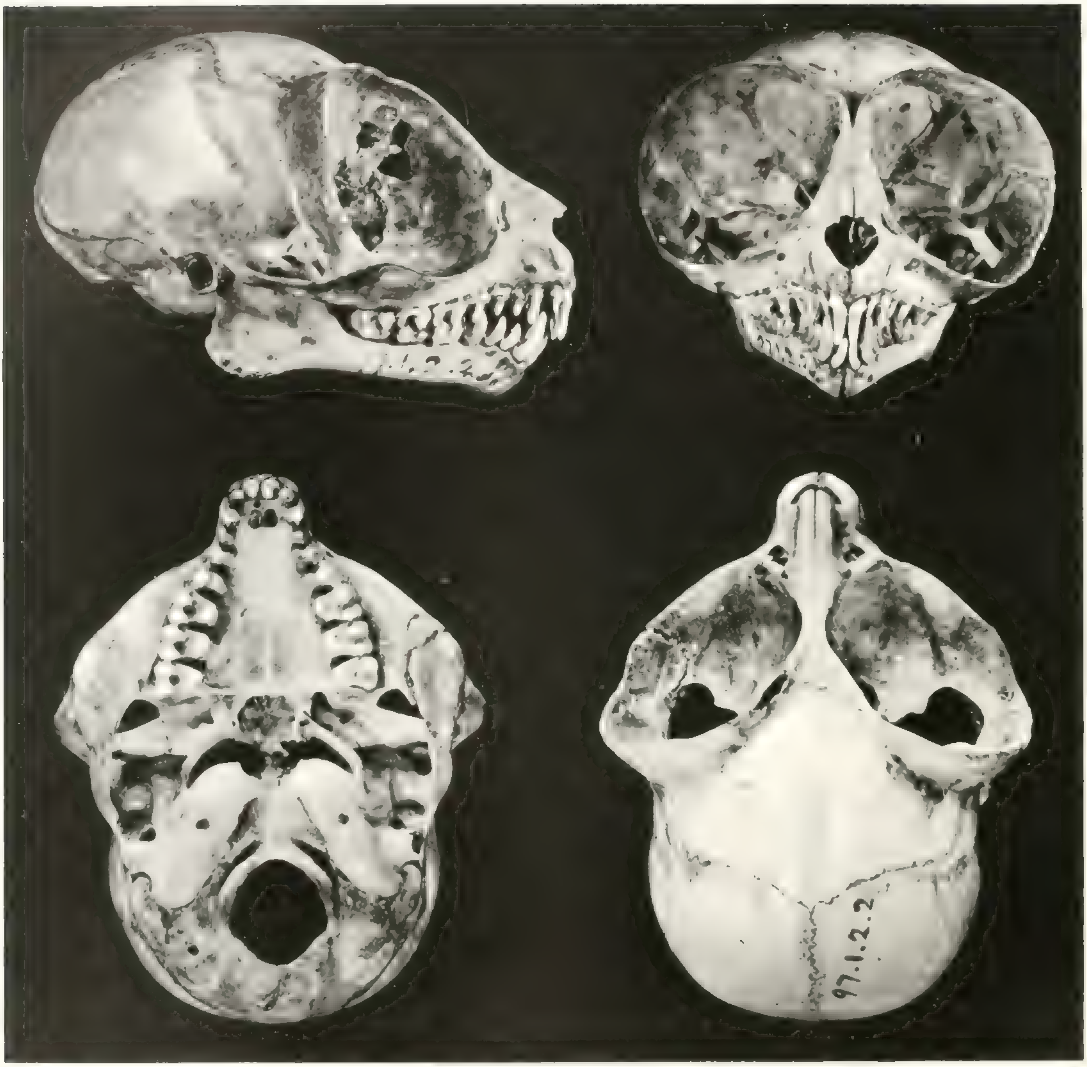
The Aye-Aye lives in the trees and is strictly nocturnal, becoming active on the disappearance of the sun. One young is said to be produced at a birth, and the female builds a large nest, two feet in diameter, of rolled up leaves of the Traveller tree, lining it with twigs and dry leaves and with an entrance on one side. The natives are very superstitious in regard to this animal, and are very unwilling to attempt to capture it.

A female Aye-Aye lived for several years in the Garden of the Zoological Society in Regent's Park, London, and Mr. Bartlett, the late Superintendent, has placed on record (l. c.) some interesting facts regarding its habits. On the voyage it gave birth to one young, which lived only ten days, and the mother was in very poor condition when she arrived, being thin and feeble. It slept during the day, lying on its side with the body curved and the tail spread out and flattened, and used as a covering, almost concealing the animal. At night it was active, moving about its cage in the dark and trying to gnaw its way out. It exhibited no uneasiness when a light was introduced, but tried to touch the lamp with its long fingers. It was in the habit of hanging by the hind legs, and when so suspended, employed the slender wire-like finger to clean and comb the tail. The same finger was utilized to clean the face, and pick at the corners of the eyes, the nose, mouth, ears, and various parts of the body. While so occupied the other fingers are kept partially closed.

Only the left hand was used in feeding and was moved very rapidly. The manner of taking food was peculiar. The fourth finger was thrust into the food, the slender finger being at the same time raised above and behind the others, and the first finger and thumb were lowered. The hand is then drawn rapidly back and forth, the inner side of the fourth finger passing between the lips, the head all the time held sideways, and at each movement the food was deposited in the mouth. Sometimes the animal would lap up the food from the dish, but not often. It never watched for its food or guarded it, for on Mr. Bartlett's removing the dish while the creature was feeding, it continued to thrust its hand forward, and only discontinued when no more food was procured, and then moved away to search elsewhere. After taking food in a fluid state, it frequently ate portions of wood and bark. It was fed upon a mixture of milk, honey, eggs and any thick, sweet, gelatinous food, but would not touch meal worms, grasshoppers, the larvæ of wasps and similar objects. It never uttered any sound or exhibited any anger, neither was it shy. Mr. Bartlett obtained some fresh sugar cane and placed some sticks in the cage, and the Aye-Aye exhibited much fondness for it, cutting deeply into the cane with its powerful incisor teeth, then the fibre was drawn out and the juice extracted by chewing.

Mr. Shaw (l. c.) gives an interesting account of an Aye-Aye he had in captivity, relating its peculiar habits, most of which have already been given in the quoted statements of previous writers, but certain facts are worth recording. He says when his captive in its efforts to escape bit at the wire of its cage he noticed that the incisors of either jaw would separate and admit the wire between them even down to the gum, causing their tips to be a considerable distance apart. It was very savage and struck with its hands, but in the daytime its movements were slow and uncertain.

Regarding the superstitions the natives entertain of the animal, he states that many years ago, the Bétsimisáraka, in whose country the Aye-Aye is chiefly found, had occasion to open an old tomb in which an ancestor had been buried. No sooner was an entrance effected than an animal, which was a development of said ancestor, sprang out, and their exclamation of surprise, "Haye-haye," became the creature's name. Hence many of these people believe that the Aye-Aye is an embodiment of their forefathers and will not touch it, but when they happen to find a dead one in the forest, they make a tomb for it and bury it with all formality. They imagine that if they try to catch one they will surely die, and this belief extends even to the animal's nest. If one is given, or picks up accidentally a portion of these structures on which the head of an Aye-Aye has rested, it will bring good fortune; while if it happens to be the part on which the feet had been placed, bad luck or death would surely follow.



TARSIUS FUSCUS

No. 97.1.2.2. [illegible]

FAMILY 2. TARSIIDÆ.

The little animals which comprise this family are about as large as an ordinary rat, and possess several remarkable characteristics. In their habits they are nocturnal, concealing themselves among the branches of trees or bushes during the day, moving only when disturbed and becoming very active, and exhibiting often a surprising agility after the setting of the sun. They have small rounded heads with enormous eyes, the pupils of which during the day are contracted to a mere slit, but at night are enlarged to such a degree that they cover nearly the entire iris. The fur is soft and woolly. The legs, which exceed the arms in length, have long slender toes and, like the fingers, are provided with sucker-like discs, which enable them to cling firmly to the branches, or any object upon which the animal may alight during its swift progress, which is performed by powerful leaps that cover at times amazing distances for such small creatures. The tail is long and tufted, and when the animal is in flight, is carried above the line of the body, the end curving upward. The nails on the toes are flat, except those on the second and third digits which are compressed. The lower jaw has two small nearly erect incisors, but those in the upper jaw are four in number and unequal, the anterior ones being the largest, and there is no central gap present.

GENUS 1. TARSIUS. THE TARSIER.

$$\text{I. } \frac{2-2}{1-1}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{3-3}{3-3}; \quad \text{M. } \frac{3-3}{3-3} = 34.$$

TARSIUS Storr, Prodr. Meth. Mamm., 1780, p. 33, Tab. A. Type *Lemur tarsier* Erxleben.

Macrotarsus Link, Beytr. Naturg., I, Pt. II, 1795, pp. 51, 65, 66.
Rabienus Gray, Lond. Med. Repos., XV, No. 88, 1821, p. 299.
Cephalopachus Swains., Nat. Hist. Class. Quad., 1835, p. 352.
Hypsicebus Less., Spec. Mamm., 1840, pp. 207, 253-254.

Head rounded; muzzle sharp and pointed; ears long and naked; eyes large, protruding; legs longer than arms; toes slender, long, terminating in sucker-like discs; tail long, tufted. Skull: orbits very large, and closed in by the malar and alisphenoid; outer upper incisors larger than inner; canines small; premolars pointed, the first the smallest; the last molar has two cusps, one external, one internal; only two incisors on lower jaw; the first and second lower molars have four cusps, the last one five.

LITERATURE OF THE SPECIES.

1777. *Erxleben, Systema Regni Animalis.*
In this work the name *Lemur tarsier* was given to 'Le Tarsier' of Buffon, which is an undeterminable species.

1780. *Storr, Prodromus Methodi Mammalium.*
The genus TARSIUS here first instituted for the *Lemur tarsier* Erxleben, which is undeterminable.

1804. *Fischer, Anatomie der Maki und der ihnen verwandten Thiere.*
TARSIUS FUSCUS first described.

1824. *Horsfield, Zoological Researches in Java.*
TARSIUS BANCANUS first described.

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*
The Tarsiers are here included in two genera TARSIUS with *T. spectrum* undeterminable, and *T. spectrum* Var., and T. FUSCUS; and *Hypsicebus* with one species (*H.*) BANCANUS.

1846. *Burmeister, Beiträge zur näheren Kenntniss der Gattung Tarsius.*
TARSIUS FUSCUS redescribed as *T. fischeri.*

1896. *Meyer, in Abhandlungen und Berichte des Königl. Zoologischen und Anthropologisch-Ethnographischen Museum zu Dresden.*
T. PHILIPPINENSIS first described from Island of Samar.

1899. *Meyer, in Abhandlungen und Berichte des Königl. Zoologischen und Anthropologisch-Ethnographischen Museum zu Dresden.*
T. SANGHIRENSIS from Sanghir Island first named. Species not yet established.

1910. *Miller, in Proceedings of the United States National Museum.*
T. FRATERCULUS from Island of Bohol first described.

1910. *D. G. Elliot, in Bulletin of the American Museum of Natural History, New York.*
T. SALTATOR from Billiton Island, and T. BORNEANUS from Borneo first described; and Le Tarsier Buffon shown to be undeterminable.

1910. *Cabrera, in Annals and Magazine of Natural History.* In this paper reference is made to *Lemur tarsier* Erxl., which, it is stated, must be taken instead of *Tarsius spectrum* Pallas as the name of the species, the Author evidently not being aware of the fact that Erxleben's species, and also that of Pallas both founded on Buffon's animal, are quite undeterminable and therefore both names must be dropped.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

The members of this genus are found on the islands of the East Indian Archipelago. Seven species have been described, of which two are not yet satisfactorily established. In Borneo we have T. BORNEANUS, its range unknown; in Billiton Island T. SALTATOR is found, and it may probably occur in Banka and Sumatra. In Java T. BANCANUS was met with; Celebes has T. FUSCUS, and in the Philippine Archipelago T. PHILIPPINENSIS occurs on Samar, Leyte, and Mindanao, and T. SANGHIRENSIS on Sanghir. It must be considered, however, that the dispersion of the Tarsier is as yet but very imperfectly known, and many other islands probably possess those above named, or contain species not yet discovered. There is no large series of these animals in any collection, and specimens are very much needed for study and a better understanding of the group. T. FRATERCULUS was taken on Bohol.

KEY TO THE SPECIES.

A. Tarsi and tail very long; eyes very large.
  a. Tarsi and tail mostly bare.
    a.′ No white or whitish on face.
      a.″ Large .... *T. philippinensis.*
      b.″ Small .... *T. fraterculus.*
    b.′ Forehead, nose and cheeks whitish or creamy white .... *T. sanghirensis.*
  b. Tarsi haired to ankles, feet to toes.
    a.′ Tail mostly bare.
      a.″ Under parts cream buff, molar teeth small .... *T. saltator.*
      b.″ Under parts slate gray, molar teeth large .... *T. borneanus.*
      c.″ Under parts gray, inclining to whitish .... *T. bancanus.*
    b.′ Tail two-thirds haired, tip tufted........... *T. fuscus.*

TARSIUS PHILIPPINENSIS Meyer.

Tarsius philippinensis Meyer, Abhandl. Berich. Königl. Zool. Anthrop.-Ethnogr. Mus. Dresd., 1894, No. 1, p. 1; 1896, No. 1, p. 9; Thos., Trans. Zool. Soc. Lond., XIV, 1896, p. 381; Major, Proc. Zool. Soc. Lond., 1901, p. 138, fig. 35.

PHILIPPINE TARSIER.

Type locality. Island of Samar, Philippines. Type in Dresden Museum.

Geogr. Distr. Samar; Leyte, (Whitehead); Mindanao, (Steere); Philippine Archipelago.

Genl. Char. Tarsi bare, tail bare except toward tip where it is sparsely haired.

Color. Face and top of head reddish brown; upper parts reddish brown, paler than face; outer side of limbs reddish brown, lightest on legs; throat and chest reddish; under parts yellowish gray; tail dark brown. Ex type Dresden Museum.

Measurements. Size about same as T. FUSCUS, type mounted. Skull: occipito-nasal length, 32; Hensel, 14; zygomatic width, 28; intertemporal width, 22; palatal length, 14; breadth of orbits, 18; width of braincase, 23; median length of nasals, 7; length of upper molar series, 13; length of mandible, 26; length of lower molar series, 13. Ex type Dresden Museum.

All specimens are not so red as the type, and some are dark grayish on the back of the head, with the shoulders and upper back washed with reddish; hands dark brown; feet pale rufous. An example from Mindanao before me is quite pale, a wood brown with a reddish tinge, the upper back only inclined to rusty. The Philippine Tarsier is more or less a reddish animal, and in the prevalence of this color it differs from the Tarsier of the other island groups in the eastern seas.

The following account of the habits of this little animal by Mr. John Whitehead, who obtained specimens in Samar, was published by Mr. O. Thomas in his paper above referred to.

Mr. Whitehead states: "This remarkable mammal is found in the islands of Samar and Leyte where it is called by the Biscayas 'Magou.' So far as I am aware it has not been obtained in Luzon or Mindoro to northwest of Samar. It probably occurs in the great Island of Mindanao, and perhaps in Bohol, to the south of Leyte.

"In habits the 'Magou' is nocturnal, as the enormous owl-like eyes would lead one to suppose; it frequents abandoned clearings where the new growth has sprung up to a height of some twenty feet, and in Samar where the ground is also thickly covered with ferns and other plants to a height of some three feet. In such places this little animal easily conceals itself during the day. I had the good fortune to see a 'Magou' in such a locality one day in Samar. The Tarsius was clinging to the stem of a small tree just above the fern growth, with its peculiar hands around the tree; it was awake and intently watching my movements, and permitted me to approach as close as I wished; when, doubtless at the least sudden movement of my hands it would have jumped to the ground, and made off in the thick woody growth. During the night the 'Magou' is very active, and may often be heard, in localities where they are numerous, uttering a peculiar squeak like a monkey. From its habits of feeding only on insects this animal has a strong Bat-like smell.

"In Samar where at different times I kept several 'Magous' alive, I found them very docile and easily managed during the day. They fed off grasshoppers sitting on their haunches on my hand. When offered an insect, the 'Magou' would stare for a short time with its most wonderful eyes, then slowly bend forward, and with a sudden dash would seize the insect with both hands and instantly carry it to its mouth, shutting its eyes and screwing up its tiny face in a most whimsical fashion. The grasshopper was then quietly passed through the sharp little teeth, the kicking legs being held by both hands. When the insect was beyond farther mischief, the large eyes of the 'Magou' would open, and the legs and wings were then bitten off, while the rest of the body was thoroughly masticated. My captives would also drink fresh milk from a spoon. After the sun had set this little animal became most difficult to manage, escaping when possible, and making tremendous jumps from chair to chair. When on the floor it bounded about like a miniature Kangaroo, travelling about the room on its hind legs with the tail stretched out and curved upward, uttering peculiar shrill monkey-like squeaks, and biting quite viciously when the opportunity offered. During the day the pupil of the eye becomes so contracted that it appears only as a fine line, but after dark it is so expanded as to fill up most of the iris.

"The popular native idea is that the 'Magou' feeds on charcoal, the reason for this being that the animal is generally found after the old plantations have been cut down and burnt, this 'Magou' doubtless having returned to its old haunts from which it had been driven by the wood cutters. This delusion is fatal to all captured 'Magous,' as they are immediately put on a diet of charcoal, and, therefore, soon starve to death."

TARSIUS FRATERCULUS Miller.

Tarsius fraterculus Miller, Proc. U. S. Nat. Mus., XXXVIII, 1910, p. 404.

Type locality. Sevilla, Bohol, Philippine Islands.

Genl. Char. Similar to T. PHILIPPINENSIS but smaller.

Color. Upper parts, sides of body and outer side of limbs ochraceous buff; chest and abdomen buff, base of hairs slate gray showing through; inner side of limbs buff; forehead and face reddish; tail mostly naked reddish, hands reddish. Ex type, Bur. Philipp. Govt.

Measurements. Total length, 330; tail, 210; foot, 60. Skull: total length, 37.9; occipito-nasal length, 35.9; Hensel, 13.8; intertemporal width, 20; zygomatic width, 26.4; palatal length, 12.9; median length of nasals, .71; length of upper molar series, 12.3; length of mandible, 24.1; length of lower molar series, 12.5. Ex type, Bur. Laboratories, Manilla, Philipp. Govern.

This is a small representative of the Philippine Tarsier.

TARSIUS SANGHIRENSIS Meyer.

Tarsius sanghirensis Meyer, Abhand. Berich. Königl. Zool. u. Anthrop.-Ethnog. Mus. Dresd., 1897, No. 1, p. 9; Thos., Trans. Zool. Soc. Lond., XIV, 1896, p. 381.

SANGHIR TARSIER.

Type locality. Island of Sanghir, Philippine Archipelago.

Genl. Char. Very near T. PHILIPPINENSIS, but apparently differs in having the forehead, nose and cheeks buffy white.

Color. Like T. PHILIPPINENSIS, but forehead, nose and cheeks buffy white.

Dr. Meyer does not describe this species, but has contented himself with comparing it with T. FUSCUS and showing where it differs from that species. This was easy for it has nothing to do with T. FUSCUS, but is very doubtfully separable from T. PHILIPPINENSIS. Dr. Meyer does not show where his animal differs from that species, though he says it is allied to it; in fact, if the figure in the plate is colored correctly, it does differ from all known *Tarsiers,* in its buffy white forehead, nose and cheeks.

This, however, is an unsatisfactory conclusion to reach, because it would seem incredible, if the Sanghir examples possessed this remarkable peculiarity, that Dr. Meyer did not mention it.

I could not find the type of T. SANGHIRENSIS in the Dresden Museum and doubt if it is there, and so could not compare it with T.

PHILIPPINENSIS; but knowing how rarely a small colored figure gives a correct representation of the original, I should expect to find the present form inseparable from T. PHILIPPINENSIS. Being at present unable to prove it to be the same, I leave T. SANGHIRENSIS to occupy a specific rank.

TARSIUS SALTATOR Elliot.

Tarsius saltator Elliot, Bull. Am. Mus. Nat. Hist., N. Y., 1910, p. 152.

BILLITON ISLAND TARSIER.

Type locality. Billiton Island, East Indian Archipelago. Type in United States National Museum, Washington.

Genl. Char. Tail sparsely haired on apical third; tarsi hairy to the ankles, and on feet to toes; ascending ramus of mandible short, and comparatively narrow, molar teeth smaller than Bornean or Philippine examples.

Color. Forehead, sides of face, neck and upper lip, and narrow collar from beneath ears, passing above shoulders and across back between shoulders, rusty; top of head and back of neck to upper back wood brown, hairs tipped with black, and this gives a darker hue to the wood brown when seen from above; middle of back buff; rump ochraceous; thighs tawny ochraceous; outer side of arms and outer side of legs below knees ochraceous buff; inner side of arms whitish buff; under parts of body and inner side of legs cream buff, base of fur slate color, and this shows through, becoming the almost dominant color on under parts of body; throat and upper part of breast rust color; hands and feet buff, fingers and toes reddish brown; tail at root covered with cream buff fur; hairs on apical third dark brown; naked portion Prout's brown grading into black in skin, "dull reddish brown in life" (Collector); ears furred at base, rest bare, dark burnt umber. Ex type United States National Museum.

Measurements. Total length, 361; tail, 228; foot, 68, (Collector). Skull: total length, 37; occipito-nasal length, 35; Hensel, 23.3; intertemporal width, 23; zygomatic width, 26.5; palatal length, 13.9; width of palate between last molars, .90; medium length of nasals, .48; length of upper molar series, 15.1; length of mandible, 24.1; length of lower molar series, 12.5. Ex type United States National Museum.

TARSIUS BORNEANUS Elliot.

Tarsius borneanus Elliot, Bull. Am. Mus. Nat. Hist., N. Y., 1910, p. 151; Lyon, Proc. U. S. Nat. Mus., XL, 1911, p. 136.

Type locality. Sandak River, Borneo. Type in United States National Museum.

Genl. Char. Tarsi haired to ankles, feet to toes; apical third of tail sparsely haired, rest bare, except at root; molar series larger than T. SALTATOR and palate longer.

Color. Forehead, top of head and sides of face rusty; middle of back and outer sides of arms and lower back grayish brown; rump smoke gray, outer side of legs slaty gray, with a rusty patch below knee; inner side of arms whitish gray; of legs mouse gray; face ochraceous buff, throat and chest brownish, the slate gray of base of fur dominating the brown; rest of under parts slate gray, hairs tipped with whitish; tail whitish gray at root; bare portion reddish brown; paler beneath; haired portion grayish brown, darker at tip; feet reddish brown, hands, fingers and toes darker brown; ears blackish brown, naked. Immature. Ex type United States National Museum.

Measurements. Total length, 310; tail, 190; foot, 69, (Collector). Skull: total length, 36.1; occipito-nasal length, 33.6; Hensel, 22.1; intertemporal width, 23.1; zygomatic width, 23.8; palatal length, 14.6; width of palate between last molars, .84; median length of nasals, 64; length of upper molar series, 12.3; length of mandible, 23.4; length of lower molar series, 12.5. Ex type United States National Museum. Skull of adult: total length, 39.3; occipito-nasal length, 36.4; Hensel, 26.1; intertemporal width, 28; zygomatic width, 28.4; palatal length, 14.3; width of palate between last molars, .93; median length of nasals, .58; length of upper molar series, 12.9; length of mandible, 27.5; length of lower molar series, 13.9. Skull only, no skin.

TARSIUS BANCANUS Horsfield.

Tarsius bancanus Horsf., Zool. Research., 1821, No. 2, pl.; Fitzing., Sitzungsb. Mitth. Naturw. Akad. Wiss. Wien, 1870, p. 758.

Hypsicebus bancanus Less., Spec. Mamm., 1840, p. 253.

JAVAN TARSIER.

Type locality. Banca, near Jeboos, Java.

Genl. Char. Tail nearly naked; tarsi haired to ankle; only two upper incisors, and five teeth in molar series on each side both jaws.

Color. "General color brown inclining to gray; on the breast, abdomen and interior of extremities it is gray, inclining to whitish; a rufous tint is sparingly dispersed over the upper parts which shows itself most on the head and extremities; the naked parts of the tail near the root are considerably darker than the extremity." Horsfield.

This is evidently a young animal with the teeth not yet fully developed. From Horsfield's description given above it is impossible to say to which species it is nearest, and, therefore, for the present it is left as a separate form. The only specimen from Java I know is in the Leyden Museum in alcohol, and of course cannot be trusted for color. It has, however, four upper incisors.

TARSIUS FUSCUS Fischer.

Tarsius fuscus Fischer, Anat. Maki, 1804, p. 3; Meyer, Abhandl. Mus. Dresd., 1896, No. 1, p. 8; Forbes, Handb. Primates, 1894, p. 21.

Tarsius fuscomanus Fisch., Anat. Maki, 1804, p. 37, t. IV-VI; Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 168, No. 2; Desm., Mamm., 1820, p. 131; Fitzing., Sitzungsb. Mitth. Naturw. Akad. Wissensch. Wien, 1870, p. 754.

Tarsius fischeri Burm., Beitr. z. näh. Kennt. Gatt. Tarsius, 1846, pp. 29, 129; Fisch., Anat. Maki, 1804, p. 37.

Tarsius spectrum var. A. Less., Spec. Mamm., 1840, p. 252.

FISCHER'S TARSIER.

Type locality. Celebes.

Geogr. Distr. Celebes. Saloyer.?

Genl. Char. Tarsi haired to the feet, which are also haired to the toes; tail haired throughout more than half its length; white spot behind ear.

Color. Head dark broccoli brown; upper back reddish brown; rest of back and rump wood brown; behind ears a whitish patch; outer side of arms rusty; outer side of legs wood brown; inner side of limbs and under parts buff, slate color of base of hairs showing; hands and feet wood brown; fingers and toes reddish brown; tail wood brown at root, then bare, Prout's brown, haired portion and tuft at tip purplish black; ears dark brown.

Measurements. Total length to end of hairs of tuft, 415; tail, 250; foot, 57, (skin).

This species is easily recognized from all others by its more hairy tail, and the white spot behind ears.

FAMILY 3. NYCTICIBIDÆ.

Subfamily 1. Lorisinæ.

GENUS 1. LORIS. THE SLENDER LORIS.

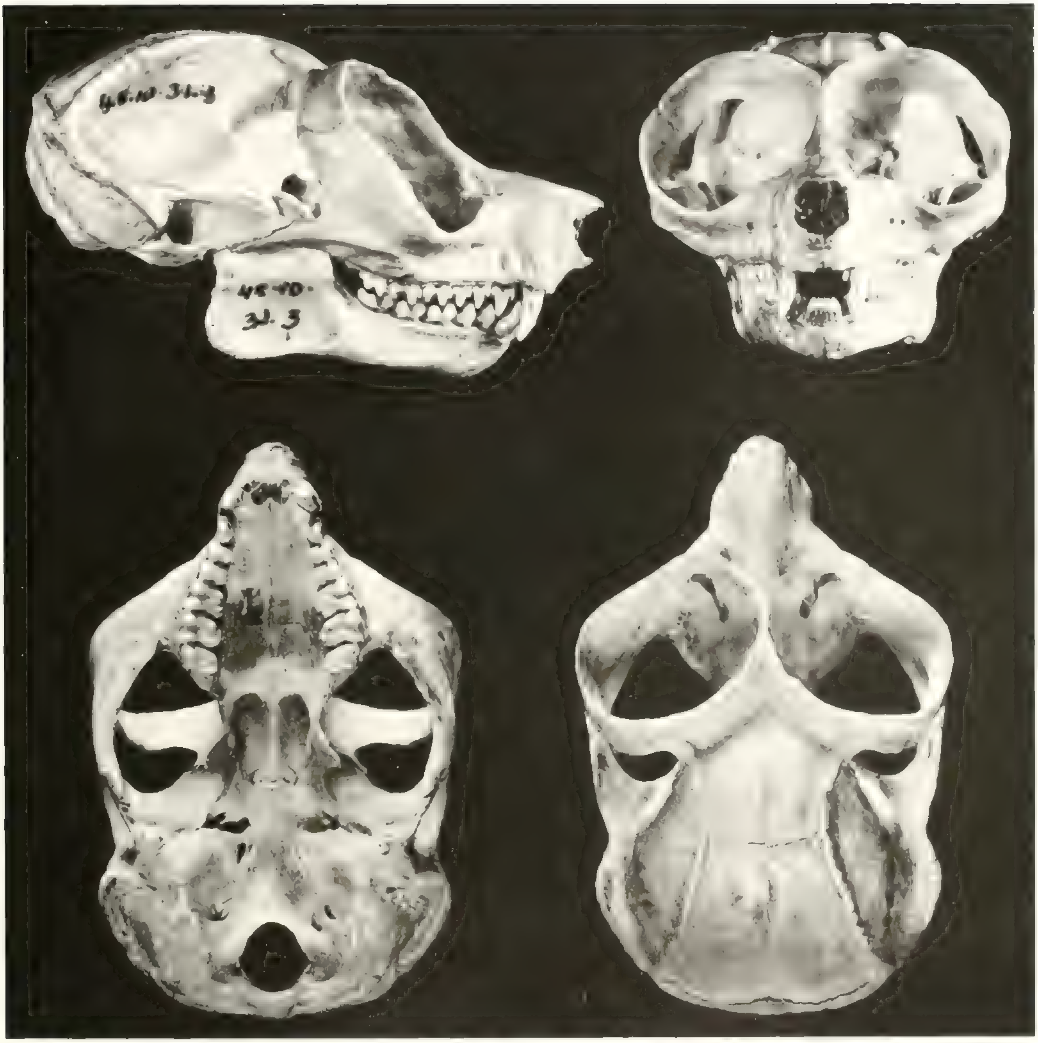
$$\text{I. } \frac{2-2}{2-2};\quad \text{C. } \frac{1-1}{1-1};\quad \text{P. } \frac{3-3}{3-3};\quad \text{M. } \frac{3-3}{3-3} = 36.$$

LORIS E. Geoff., Mag. Encyclop., 2me Année, I, 1796, p. 48. Type *Loris gracilis* E. Geoffroy, = *Lemur tardigradus* Linn.
Tardigradus Bodd., Elench. Anim., 1784, p. 67, (nec Brisson, 1762, Bradipodidæ).
Lori Lacépèd., Tabl. Mamm., 1799, p. 5.
Stenops Illig., Prodr. Syst. Mamm. et Avium, 1811, p. 73.
Loridium Rafin., Analyse de la Nature, 1840, p. 207.

Fur soft, thick, woolly; muzzle narrow, pointed; eyes very large; ears small, tip naked; limbs long, slender; tail absent. Skull: orbits approximate; braincase broadest anteriorly; palate extending beyond last molar; incisors small; last lower molar with five cusps.

The earliest genus proposed for this animal was *Tardigradus* Boddært, (l. c.) as shown by Messrs. Stone and Rehn, (l. c.) in their review of the Genus. Unfortunately, however, the name had been previously employed by Brisson in the BRADIPODIDÆ, and therefore was not available, and LORIS proposed by Geoffroy, (l. c.) the next in succession, became the term to be selected.

The members of the family NYCTICIBIDÆ are small animals, nocturnal in habits, slow in movement and covered with a soft, thick, woolly fur. They are contained in four genera: LORIS with two species; NYCTICEBUS with eleven species and subspecies; ARCTOCEBUS with two and PERODICTICUS with four species. The eyes are large and the ears erect; the limbs subequal; the tarsi short, and the tail is either short, rudimentary or wanting altogether. The third upper premolar is smaller than the first and possesses one large external cusp, and the last upper molar varies in the number of its cusps in the different genera, being quadricusped in LORIS, tricusped in NYCTICEBUS and ARCTOCEBUS, and bicusped in PERODICTICUS.


48.10.31.3
48.10.
31.3

LORIS TARDIGRADUS.

No. 48.10.31.3 Brit. Mus. Coll. ⅓ larger than Nat. Size.

LITERATURE OF THE SPECIES.

1758. *Linnæus Systema Naturæ.*
The slender Loris from Ceylon was here first described as *Lemur* TARDIGRADUS; and this nomenclature was followed by Erxleben, Gmelin, and Schreber.

1784. *Boddært, Elenchus Animalium.*
The genus *Tardigradus* was here instituted for the *Lemur* TARDIGRADUS Linn., but being preoccupied by Brisson in *Bradipodidæ* could not be again employed.

1796. *E. Geoffroy Saint-Hilaire, in Magasin Encyclopédique.*
The Linnæan species *Lemur* TARDIGRADUS was here renamed *Lemur gracilis,* and LORIS established as the generic name.

1804. *Fischer-de-Waldheim (G). Anatomie der Maki und der ihnen verwandten Thiere.*
Lemur TARDIGRADUS Linn., was here redescribed as *Lemur ceylonicus.*

1904. *Lydekker, in Proceedings of the Zoological Society of London.*
In this paper the author separates the Slender Loris from Ceylon as a species distinct from the Indian and names it *Lemur gracilis ceylonicus,* unmindful of the fact that Linnæus' species came from Ceylon, and that the name *ceylonicus* had been already bestowed on the animal.

1908. *Cabrera, in Boletin Sociedad Española de Historia Natural. Madrid.*
Dr. Cabrera here points out the error committed by Mr. Lydekker and renames the Indian *Loris* LYDEKKERIANUS.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

The two species which represent the genus at the present time have a rather restricted dispersion in the localities they frequent. L. TARDIGRADUS is apparently confined to the Island of Ceylon, where it is called according to Tennent, the Ceylon Sloth. The other species L. LYDEKKERIANUS is found in the southern part of the Indian Peninsula at a low elevation on the Malabar coast, and in the forests of the eastern Ghats, where according to Jerdon it is common. It is very difficult, however, to determine accurately the dispersion of small mammals such as these, whose habits are strictly nocturnal, for it is not impossible for them to reside in a locality covered by dense forests and be quite unknown to the people inhabiting the district.

KEY TO THE SPECIES.

A. White streaks between eyes.
  a Upper parts plain brown.................. *L. tardigradus.*
  b Upper parts brownish gray................ *L. lydekkerianus*

Loris tardigradus (Linnæus).

Lemur tardigradus Linn., Syst. Nat., I, 1758, p. 29; I, 1766, p. 44.

Lemur gracilis E. Geoff., Mag. Encyclop., 1796, p. 48; *Id.* Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 163, (Ceylon); Gray, List Spec. Mamm. Brit. Mus., 1843, p. 16; I. Geoff., Cat. Primates, 1851, p. 79, (Ceylon); Kelaart, Prodr. Faun. Zeyl., 1852, p. 9; Anders., Cat. Mamm. Ind. Mus. Calc., Pt. 1881, p. 97; Blanf., Faun. Brit. Ind., Mamm., 1888, p. 47, (Part.); Beddard, Proc. Zool. Soc. Lond., 1895, p. 145, fig. 3, (Brain); Forsyth-Major, Proc. Zool. Soc. Lond., 1901, p. 140, figs. 40, 42.

Lemur ceylonicus Fisch., Anat. Maki, 1804, p. 28, t. XII.

Stenops gracilis Kuhl, Beitr., 1820, pp. 37, 47, t. VI, fig. 2; Van der Hoeven, Tijdsch. Natur. Ges., XI, 1844, p. 39, pl. I, No. 4; Schinz, Syn. Mamm., I, 1844, p. 109; Kelaart, Faun. Zelan., 1852, p. 9; Gray, Proc. Zool. Soc. Lond., 1863, p. 159.

Nycticebus lori Fisch., Syn. Mamm., 1829, p. 70.

Nycticebus gracilis (Ceylon), Blainv., Ostéog., 1841, Atl., Lemur, pl. H; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 284, (Ceylon).

Arachnocebus lori Less., Spec. Mamm., 1840, p. 243.

Stenops tardigradus Schinz, Syn. Mamm., 1844, p. 168; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wiss. Wien, 1870, p. 698; Lydekk., Proc. Zool. Soc. Lond., 1904, II, p. 346, pl. XXIII, fig. 4.

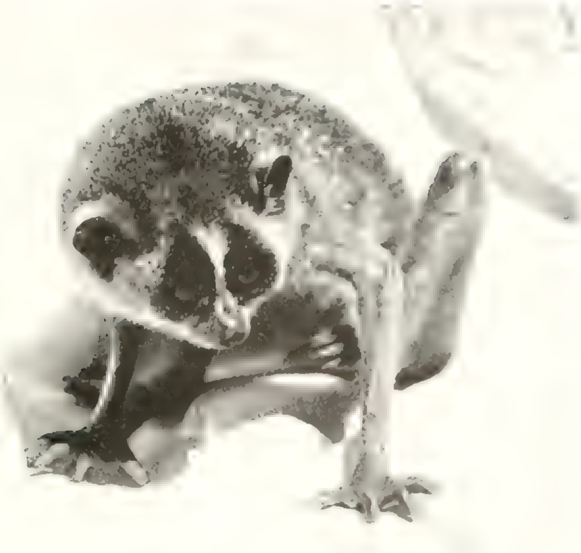
Loris gracilis Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 211, t. IX, figs. 33, 34.

CEYLON SLENDER LORIS.

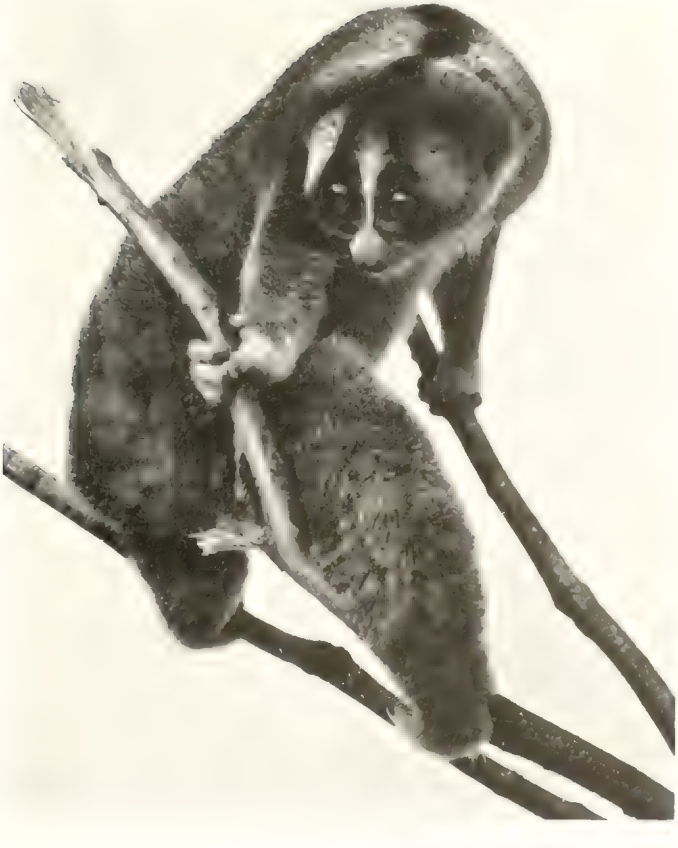
Type locality. Ceylon.

Geogr. Distr. Island of Ceylon.

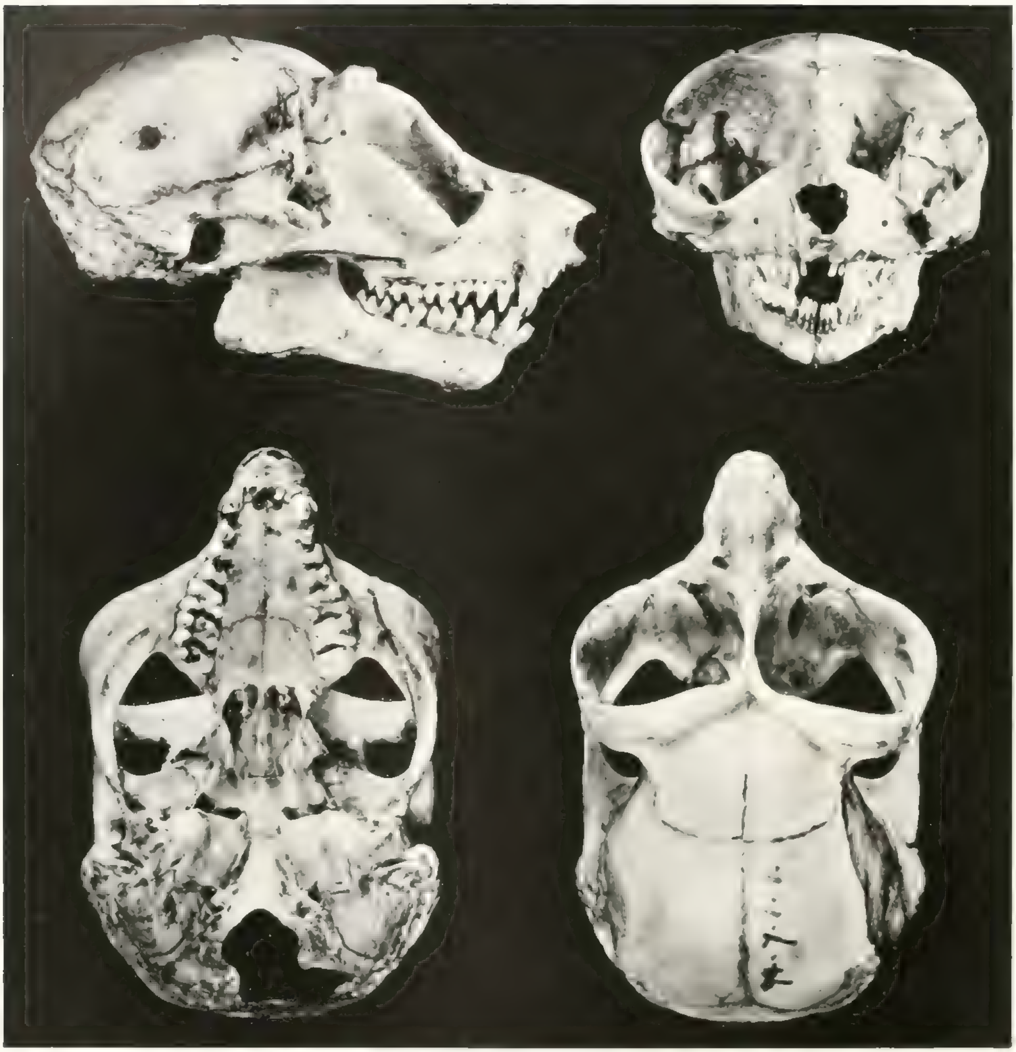
Color. Above wood brown tinged with tawny and slightly clouded with blackish, with much silvery gloss in certain lights; throat,



LORIS TARDIGRADUS.



NYCTICEBUS COUCANG.



LORIS LYDEKKERIANUS.

No. 94.7.1.1. Brit. Mus. Coll. [illegible] larger than Nat. Size.

cheeks, chin, and median face stripe whitish; dark face markings like back; crown tawny; under parts cream buff, outer side of limbs like back; inner side like belly; base of fur gray. Ex Lydekker's type of *Loris gracilis zeylonicus* in British Museum.

Measurements. About the same as the Indian species.

Lemur tardigradus Linnæus was described from a Ceylon specimen as was clearly proved by Stone and Rehn, (Proc. Acad. Nat. Scien. Phila., 1902, p. 137), in their revision of the genus NYCTICEBUS. Mr. Lydekker, in the Proc. Zool. Soc. Lond., 1904, p. 346, decided that the animals from India and Ceylon were separable, one being a race of the other, but unfortunately he selected the one from Ceylon as new, and conferred upon it the name of *Loris gracilis zeylonicus* which was preoccupied by *L. ceylonicus* given by Fischer, (Anat. Maki, p. 28, t. 7, 8, 9, and 18), also to the Ceylon form. In the next species the tangle caused by Mr. Lydekker conferring a name upon the wrong animal was unravelled by Dr. Cabrera.

LORIS LYDEKKERIANUS Cabrera.

Loris lydekkerianus Cabr., Bol. Soc. Españ. Hist. Nat., 1908, p. 135; Thos., Ann. Mag. Nat. Hist., Ser. 8, 1908, p. 469.

Loris gracilis typicus Lydekk., Proc. Zool. Soc. Lond., 1904, p. 346, pl. XXIII, fig. 8.

Loris tardigradus Thos., Proc. Zool. Soc. Lond., 1911, p. 129.

LYDEKKER'S SLENDER LORIS.

Type locality. Madras, India.

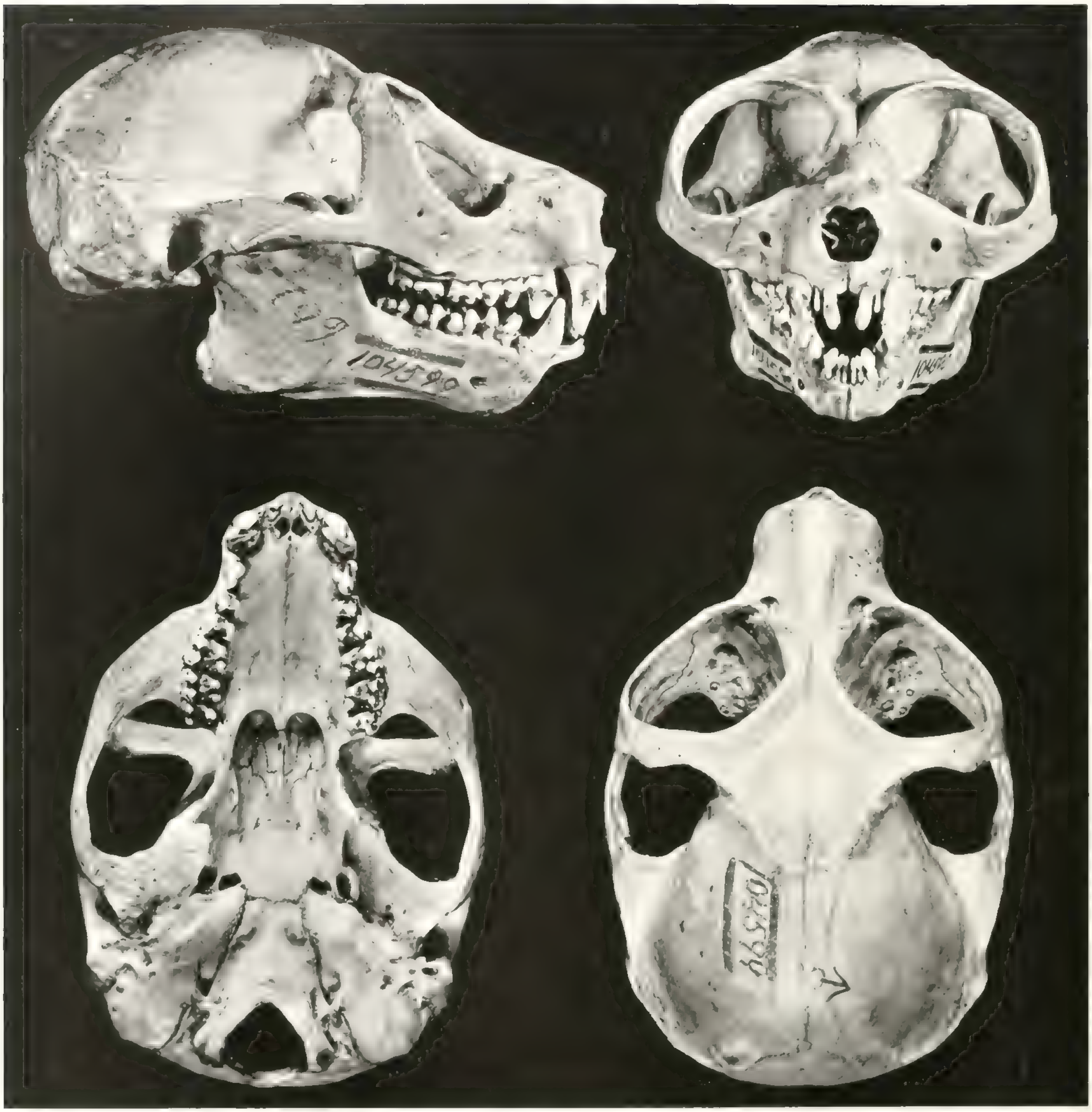
Geogr. Distr. Southern India, near states east of British Burma in forests of the lowlands, (Jerdon); Madras and possibly on the west coast near Ratnageri, (Blanford).

Genl. Char. Size small, colors pale, no red on head.

Color. White stripe from forehead down nose between eyes; orbital ring sooty with a brown tinge, this extending upward on forehead on each side of the white stripe; whiskers here quite broad; top of head, neck and upper parts of body brownish gray with white hairs intermingled; flanks paler, yellowish; sides of head grayish white; lips, chin, throat, under side of body and inner side of limbs white; outer side of arms to elbow yellowish gray; forearms and legs below knees sooty gray; outer side of thighs yellowish with a sooty stripe over upper side from hips to knees; hands and feet white.

Measurements. Head and body, 180; foot, 40. Skull: total length, 48.9; occipito-nasal length, 38; intertemporal width, 17.7; Hensel, 34.7; zygomatic width, 29; width of braincase, 24.7; length of nasals, 13.3; palatal length, 15.8; length of upper molar series, 13.1; length of mandible, 26.5; length of lower molar series, 14.

This is the southern Indian species of Loris, which has always been called L. TARDIGRADUS, authors ignoring the fact, as has already been shown, that Linnæus gave that name to the Loris of Ceylon. Dr. Cabrera corrected the error (l. c.) into which Mr. Lydekker fell, and gave to the Indian animal the name LYDEKKERIANUS.



NYCTICEPUS NATUNÆ

No. 104599 U. S. Nat. Mus. Coll. Type [illegible] Nat. Size.

GENUS 2. NYCTICEBUS. SLOW LORIS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{3-3}{3-3}; \quad \text{M. } \frac{3-3}{3-3} = 36.$$

NYCTICEBUS E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 162. Type *Nycticebus bengalensis* Geoffroy, = *Tardigradus coucang* Boddært.

**Bradycebus* Gerv., Dict. Pitt. Hist. Nat., VI, pt. II, 1836, p. 617, (desc. nulla).

Stenops Van der Hoeven, Tijdsch. Nat. Ges., XI, 1844, p. 39, (nec Illiger).

Bradylemur Blainv., Ostéog., Mamm., I, Lemur, 1839, p. 12.

Body heavy; fur thick, woolly; head round; muzzle short; eyes large, approximate; neck short; tail lacking; limbs short. Skull with prominent crests; orbits large; premaxillæ not produced far anteriorly; palate not extending behind second molar; inner upper incisors larger than outer; canines very long, diastema present; first premolar elongate; the last molar with a short cusp posteriorly, and three cusps on crown.

LITERATURE OF THE SPECIES.

1784. *Boddært, Elenchus Animalium.*
The Indian form was here described as *Tardigradus* COUCANG.

1812. *E. Geoffroy, Annales du Muséum d'Histoire Naturelle, Paris.*
NYCTICEBUS JAVANICUS from Java first described.

1867. *A. Milne-Edwards, in Annales du Muséum d'Histoire Naturelle, Paris.*
The Siamese form of N. COUCANG is here named *Nycticebus coucang cinereus.*

1870. *Gray, (J. E.) Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in the Collection of the British Museum.*
NYCTICEBUS COUCANG is called by the Author *tardigradus* and Linnæus erroneously cited among the authorities given. The other species recognized is N. JAVANICUS Geoff., and attention

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*This name is not in the paper of Cuv. and Geoff., in the Magazine Encyclopédique, the genus No. VI being *Papio.* Gervais gives *Bradycebus* (l. c.), but he cites the name only without description.

is called to *N. ceylonicus* Geoff., as a possible variety of N. JAVANICUS.

1881. *Anderson, Catalogue of Mammalia in the Indian Museum, Calcutta.*
The form from the Malayan Peninsula described as *Nycticebus tardigradus malaianus.*

1888-91. *Blanford, The Fauna of British India including Ceylon and Burma.*
The form from Tenasserim is figured and described on the authority of Tickell *Nycticebus tardigradus*, Tenasserim variety.

1902. *Stone and Rehn, in Proceedings of the Academy of Natural Sciences of Philadelphia.*
Nycticebus (*coucang*) *hilleri* from Sumatra, and *Nycticebus* (*coucang*) *natunæ* from Bungaran, Natuna Islands, first described and a revision of the genus NYCTICEBUS given.

1906. *M. W. Lyon, in Proceedings of the National Museum, Washington.*
NYCTICEBUS BORNEANUS from Western Borneo, and NYCTICEBUS BANCANUS from the Island of Banka, first described.

1907. *Bonhote, in Proceedings of the Zoological Society of London.*
NYCTICEBUS PYGMÆUS first described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

This small group of night-loving animals is essentially one of the Oriental Region, ranging in India, Arakan, Assam, Siam, Annam, Tenasserim, Malay Peninsula, Sumatra, Banka, Java and Borneo, the Natuna Group and the Philippines. The N. COUCANG ranges to the east of the Bay of Bengal, Burma and possibly Assam, but it is practically impossible to define its boundaries as it has been so confused with *N. c. cinereus,* and it may eventually be ascertained, that, these species now considered distinct, are not so in reality. The dispersal of *N. c. cinereus,* which is smaller than N. COUCANG, is supposed to be in Siam and Cochin China, but it cannot be said that these boundaries are accurately defined, nor can they be, until, through the acquisition of ample material, the exact status of the two forms is determined. In Annam, N. PYGMÆUS was discovered and in Tenasserim N. TENASSERIMENSIS occurs, its range unknown, while N. MALAIANUS is found in the Malay Peninsula and on the west coast of Sumatra. In this Island also N. HILLERI has been procured, but its range is unknown; while in the Island of Banka, to the east of Sumatra, N. BANCANUS was procured. In Java N. JAVANICUS is a resident, while N. BORNEANUS represents the genus in Borneo. On Bungaron Island of the Natuna Group, N. NATUNÆ was discovered, and from somewhere in the Philippine Archipelago, locality unknown, N. MENAGENSIS was brought. In coloration these animals differ considerably even among members of the same species, and the hue of the dorsal stripe, usually a very conspicuous marking, varies greatly both in color and extent. Some animals have a conspicuous spot on the crown of the head, others are without this, and the presence or absence of this coloration has been utilized for arranging the different forms into two groups. The manner in which the temporal ridges approximate and form a sagittal crest has served also for the arrangements into groups of the known forms, and each method has answered fairly well, although in a non adult animal the skulls fail to indicate whether the temporal ridges will, in the fully mature individual, produce by joining together, a sagittal crest or not. The number of upper incisors varies between two and four, and it is difficult to determine from lack of material, the exact reason for this, whether it is an individual peculiarity, or a character of scientific importance. At the present time this question cannot be satisfactorily answered, but it would seem that, from such evidence as we have, the major portion would indicate individual variation, caused however neither by age nor sex.

KEY TO THE SPECIES.

- A. Skulls with sagittal crest; incisors two.
  - *a.* Lower orbital ring broad; under parts whitish. .*N. borneanus.*
  - *b.* Lower orbital ring narrow; under parts buffy. . . .*N. bancanus.*
- B. Skulls without sagittal crests; incisors four.
  - *a.* Stripe on forehead bifurcating and encircling the eyes . . . .*N. tenasserimensis.*
  - *b.* Stripe on forehead not bifurcating nor encircling the eyes.
    - *a.′* Lines on head indistinct . . . .*N. coucang.*
    - *b.′* Lines on head absent. . . . .*N. c. cinereus.*
    - *c.′* Lines on head conspicuous.
      - *a.″* Dorsal stripe in a reddish white or silvery white area.
        - *a.‴* Hands and feet reddish . . . .*N. javanicus.*
        - *b.‴* Hands and feet dusky . . . .*N. natunæ.*

c.‴ Hands and feet yellowish .....*N. malaianus.*
d.‴ Hands dark gray, feet reddish cinnamon ....*N. hilleri.*
b.″ Dorsal stripe in rufous area........*N. menagensis.*
c.″ Dorsal stripe in russet area..........*N. pygmæus.*

NYCTICEBUS BORNEANUS Lyon.

Nycticebus borneanus Lyon, Proc. U. S. Nat. Mus., 1906, p. 535; 1911, p. 136.

BORNEAN SLOW LORIS.

Type locality. Sakaiam River, Sanggan district, West Borneo. Type in United States National Museum.

Genl. Char. Temporal ridges forming parallel lines on top of skull; no sagittal crest.

Color. Band between eyes white; orbital rings brownish black; top of head and line down neck to middle of back, narrowing as it goes until it becomes a mere point, chestnut and burnt umber, lightest on head and neck; upper parts ochraceous buff, becoming tawny ochraceous on rump, hairs tipped with silvery white, giving a frosted appearance especially on sides of head and neck; flanks and limbs on both sides, and hands and feet pinkish buff; under parts gray with a pink tinge; tail like rump. Ex type United States National Museum.

Measurements. Total length, 305; tail, 12; foot, 67. Skull: total length, 55.9; occipito-nasal length, 55.5; Hensel, 44.1; intertemporal width, 18.3; zygomatic width, 37.2; median length of nasals, 13.4; palatal length, 17.5; length of upper tooth row, 15; length of mandible, 33.8; length of lower tooth row, 13.3. Ex type United States National Museum.

NYCTICEBUS BANCANUS Lyon.

Nycticebus bancanus Lyon, Proc. U. S. Nat. Mus., 1906, p. 536.

ISLAND OF BANKA SLOW LORIS.

Type locality. Klabat Bay, Island of Banka. Type in United States National Museum.

Genl. Char. Similar to N. BORNEANUS, but paler above, and darker beneath; outer and lower wall of orbit narrow, 3-4 mm. wide; temporal ridges parallel on top of skull; no sagittal crest.

Color. White stripe between eyes; orbital rings black; top of head and dorsal stripe to lumbar region tawny; upper parts and limbs ochraceous buff; hands and feet paler; under parts gray and ochraceous buff intermingled, hardly any frosting. Ex type United States National Museum.

Measurements. Total length, 935; tail, 8. Skull: total length, 54.5; occipito-nasal length, 54; Hensel, 45; zygomatic width, 42.1; intertemporal width, 19.3; palatal length, 19.5; median length of nasals, 16.3; length of upper tooth row, 12; length of mandible, 15.9; length of lower tooth row, 12.7. Ex type United States National Museum.

NYCTICEBUS TENASSERIMENSIS.

Nycticebus tardigradus Tenasserim variety. Blanf., Faun. Brit. Ind., 1888-91, pp. 45, 46, fig. 12.

TENASSERIM SLOW LORIS.

Type locality. Tenasserim.

Genl. Char. Dorsal stripe bifurcating on the forehead and encircling the eyes.

Color. "Pale rufescent."

Major Tickell appears to be the only one who has seen this animal, and Blanford reproduces Tickell's drawing in his work on the Fauna of British India. The manner in which the dorsal stripe bifurcates on the forehead, each stripe passing forward and encircling the eyes, is certainly peculiar and unlike that of any other member of the genus. Before its distinctness can be established satisfactorily, Tenasserim specimens must be procured and properly compared with examples from other parts of India. Blanford quoting from Tickell's notes states, that this animal is purely nocturnal and arboreal, and feeds on leaves and shoots of trees, fruits, bird's eggs, and young birds. It has been observed to raise itself on its hind legs and throw itself upon an insect. As a rule it is silent or only utters a feeble, croaking sound, but when angry and about to bite it emits a tolerably loud grunt or growl. When captured it is at first apt to be savage and prone to bite, but soon becomes very gentle and docile. This animal is tolerably common in the Tenasserim provinces and Arakan, but being strictly nocturnal in its habits, is seldom seen. It inhabits the densest forests and never by choice leaves the trees. Its movements are slow, but it climbs readily, and grasps with great tenacity. When placed on the ground it can proceed if frightened, in a wavering kind of trot, the limbs placed at right angles. It sleeps rolled up in a ball, its head and hands buried between its thighs, and wakes up at the dusk of evening to commence its nocturnal rambles. The female bears but one young at a time.

NYCTICEBUS COUCANG Boddært.

Tardigradus coucang Bodd., Elench. Anim., 1784, p. 67.

Nycticebus bengalensis Fisch., Anat. Maki, 1804, p. 30; E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 164.

Nycticebus tardigradus (nec Linn.), Fisch., Syn. Mamm., 1829, p. 71; I. Geoff., Cat. Primates, 1851, p. 78; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., 1856, fasc. I, p. 210; Blyth, Cat. Mamm. Asiat. Soc. Beng., 1863, p. 18; Gray, Proc. Zool. Soc. Lond., 1863, p. 149; Jerd., Mamm. Ind., 1874, p. 44; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 285; Anders., Cat. Mamm. Ind. Mus., 1881, p. 94, Pt. I; Blanf., Faun. Brit. Ind., Mamm., 1888, p. 44; Forbes, Handb. Primates, I, 1894, p. 33; Beddard, Proc. Zool. Soc. Lond., 1895, p. 144, fig. I; *Id.* 1904, p. 159, Fig. II, (Brain); Major, Proc. Zool. Soc. Lond., 1901, p. 140, fig. 41.

Bradylemur tardigradus Blainv., Ostéog., 1839, p. 12; Less., Spec. Mamm., 1840, p. 240.

Stenops tardigradus Van der Hoev., Tijdsch. Nat. Ges., XI, 1844, p. 39; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 151.

Nycticebus coucang Stone and Rehn, Proc. Acad. Nat. Scien. Phil., 1902, p. 141; Elliot, Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 550, fig. LXXVIII, Zool. Ser.; Lyon, Proc. U. S. Nat. Mus., 1906, p. 532.

SLOW LORIS.

Type locality. Bengal.

Geogr. Distr. Bengal, Upper Burma, possibly Annam.

Genl. Char. Head with lines indistinct; dorsal line disappearing towards crown of head.

Color. Rufescent gray above, paler beneath; dorsal stripe broad, deep brown, expanding on the crown where it is rufous including the ears; orbital ring brown. (Blanford).

This is the larger and possibly more common form of NYCTICEBUS found east of the Bay of Bengal. Its distinctness as a separate species, from *N. c. cinereus* cannot yet be established with certainty, as the material available is not sufficient for definite decisions to be reached. Blanford (l. c.) says that this species is purely nocturnal and arboreal. It feeds on leaves, shoots of trees, insects, bird's eggs and young birds. It is generally silent or utters a feeble crackling sound. If angry, however, and ready to bite it makes a low growl or grunt. In captivity it soon becomes docile and very gentle, but when first captured is apt to be savage.

NYCTICEBUS COUCANG CINEREUS (A. Milne-Edwards).

Nycticebus cinereus A. Milne-Edw., Ann. Mus. Hist. Nat. Paris, VII, 1867, p. 161; *Id.* Nouv. Archiv. Mus. Hist. Nat., Paris, III, 1867, p. 9, pl. III; Anders., Res. Zool. Yunnan, 1878, p. 103; *Id.* Cat. Mamm. Mus. E. Ind. Co., Pt. I, 1888, p. 95; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 286; Lyon, Proc. U. S. Nat. Mus., 1906, p. 532.

Nycticebus tardigradus (nec Linn.), Flower, Proc. Zool. Soc. Lond., 1900, p. 321, (ex Siam); Thos., Proc. Zool. Soc. Lond., 1900, p. 873.

Nycticebus tardigradus var. *cinerea* Anders., Cat. Mamm. Ind. Mus. Calc., Pt. I, 1881, p. 96.

GRAY SLOW LORIS.

Type locality. Siam. Type in Paris Museum.

Geogr. Distr. Siam, Cochin China.

Color. General color clear gray with a reddish tinge on side of body, shoulders, and outer side of limbs; orbital rings black; dorsal line from center of head to tail dark reddish chestnut, sometimes growing paler on lower parts; no face markings; ears rufous; under parts grayish white. Ex type in Paris Museum.

Measurements. Total length of skin, about 370. Skull: occipitonasal length, 61; Hensel, 53; zygomatic width, 43; intertemporal width, 18; palatal length, 21; width of braincase, 30; median length of nasals, 17; length of upper molar series, 18; length of mandible, 39; length of lower molar series, 15. Specimen British Museum.

The type in the Paris Museum is greatly faded from exposure to the light, and there is not much more than a trace of the original coloring left on the sides of body and shoulders, but more is to be seen on the dorsal line and rump, although these parts are much paler evidently than during the life of the animal. There are no markings on the face, and only a pale narrow reddish yellow line on center of head from between the ears. The hands and feet were probably silvery gray, but now are a dirty or sooty gray, as the accumulated dust of many years has obscured in a great degree the original coloring. The side of the body turned away from the light in the case is darker than the other, and shows more of the reddish or orange tint, but it is impossible to say what was the original color. The head is paler than the body and is a grayish white, same color as the arms and legs.

This is the smaller style of NYCTICEBUS, allied to N. COUCANG, and whether or not they represent two distinct species cannot at the present time be decided. The material available for these, as well as some others of the members of this genus is not yet sufficiently ample, and many additional authenticated specimens are required before the status of these animals can be established. For the present therefore they are permitted to remain as distinct species, although it is most probable, that, in the event of their remaining apart, the *N. c. cinereus* will only hold a subspecific rank, as a race of N. COUCANG, as is given to it here.

NYCTICEBUS JAVANICUS E. Geoffroy.

Nycticebus javanicus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 164; Gray, List Spec. Mamm. Brit. Mus., 1843, p. 16; I. Geoff., Cat. Primates, 1851, p. 78; Dahlb., Stud. Zool. Fam. Reg. Natur., fasc. I, 1856, p. 209; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 92; Stone and Rehn, Proc. Acad. Nat. Scien. Phila., 1902, p. 140; Lyon, Proc. Smith. Inst., 1907, p. 535.

Stenops javanicus Van der Hoev., Tijdsch. Natur. Gesch., XI, 1844, p. 40; Flow., Trans. Zool. Soc., V, 1866, p. 103, pl. XXVII.

JAVAN LORIS.

Type locality. Java. Type in Paris Museum.

Geogr. Distr. Island of Java.

Genl. Char. About equal in size to N. MALAIANUS but paler brown; bands on head well-defined and united to the rich brown dorsal band.

Color. Type greatly faded, but from the remains of color it exhibits and with the help of another specimen from Java, better preserved, a pretty fair idea of its original appearance can be obtained. White line from forehead between eyes to nose; sides of nose and head gray slightly tinged with rufous; line from forehead along back to rump chocolate; top of head rufous, (but now only patches of that color remaining); sides of head behind ears and sides of neck grayish white; body and limbs white tinged with reddish; the original color has faded nearly quite away, the other Javan specimen having the body and limbs of a general reddish hue. Ex type Paris Museum.

Measurements. Total length, 16 in.; foot 2⅝ in. Ex type Paris Museum.

Nycticebus natunæ. Stone and Rehn.

Nycticebus coucang natunæ Stone and Rehn, Proc. Acad. Nat. Scien. Phila., 1902, p. 140.

Nycticebus tardigradus Thos. and Hart., Novit. Zool., I, 1894, p. 655; Miller, Proc. Wash. Acad. Scien., III, 1901, p. 138.

Nycticebus natunæ Lyon, Proc. U. S. Nat. Mus., 1906, p. 534.

NATUNA ISLANDS SLOW LORIS.

Type locality. Bungaran, Natuna Islands. Type in United States National Museum.

Geogr. Distr. Natuna Islands.

Genl. Char. Distinct in coloration from all known forms. No sagittal crest, incisors four.

Color. Upper parts rich russet brown, deepest on the shoulders; limbs paler. Dorsal line rich vandyke brown becoming black on back and decreasing in width posteriorly, becoming almost obsolete on the rump; tips of hairs on each side of dorsal line silver white; crown patch broad extending to ears, burnt umber, with a broad bar of same color to orbital rings which are black; cheeks suffused with dusky brown. Lower portion of arms lighter than the other parts. Throat silvery white, rest of under parts pale cinnamon; hands and feet dusky. Ex type United States National Museum.

Measurements. Total length, 318; tail, 13. Skull: total length, 58.5; occipito-nasal length, 56.9; Hensel, 47.5; zygomatic width, 39.8; intertemporal width, 17.9; palatal length, 18.4; median length of nasals, 13.9; length of upper molar series, 16; length of mandible, 14.9; length of lower molar series, 14.4. Ex type United States National Museum.

Nycticebus malaianus (Anderson).

Nycticebus tardigradus malaianus Anders., Cat. Mamm. Ind. Mus. Calc., I, 1881, p. 95.

Nycticebus coucang malaianus Stone and Rehn, Proc. Acad. Nat. Scien. Phila., 1892, p. 141; Miller, Proc. U. S. Nat. Mus., 1903, p. 475; Lyon, Proc. U. S. Nat. Mus., 1906, p. 533.

Nycticebus sondaicus Fitzing., Sitzungsb. Meth.-Natur. Akad. Wiss. Wien, 1870, p. 705.

Nycticebus tardigradus (nec Linn.), Flower, Proc. Zool. Soc. Lond., 1900, p. 321; Bonhote, Proc. Zool. Soc. Lond., 1900, p. 873, (ex Malay Pen.).

MALAYAN SLOW LORIS.

Type locality. None given.

Geogr. Distr. Chittagong through Arakan as far south as Tringanu, Lower Siam; coast region of Sumatra ?.

Genl. Char. Darker than *N. c. cinereus* and smaller, upper incisors, 2-4.

Color. General hue brownish with a rusty tinge; head markings tawny; dorsal line seal brown to tawny; under parts cream buff; hands and feet yellowish.

Measurements. Total length, 328; tail, 16; foot, 61. Skull: total length, 68.8; occipito-nasal length, 67.5; Hensel, 49.6; zygomatic width, 43; intertemporal width, 19.2; palatal length, 19.2; median length of nasals, 16.4; length of upper tooth row, 37.2.

Capt. Flower, writing of the Siamese form under the name of *tardigradus,* states that in captivity this species will eat bananas, mangoes, and bread and milk. It is also very expert at catching small birds; and climbs about at night with considerable speed. "At one time," he writes, "I used to sleep in a hammock swung in a veranda close to a cage of 'Kongkangs', and when lying awake on moonlight nights had good opportunities of observing their habits. They could squeeze through the bars of their cage (though I never could make out how they got their bodies through such narrow openings as there were) and roam about; usually they were back in the cage by daylight; sometimes they remained absent a day or two, and on one occasion two individuals never returned to me. One kept by itself, made a nice interesting pet, but when there were more than one, I found they would resent being handled and bite; their bite may be very severe as I know from painful experience, but the stories of its being dangerously poisonous to human beings, are hard to believe. The young are carried under the mother's belly, holding on tight by all four hands, until they almost equal her in size. Many strange powers are attributed to this animal by the natives of the countries it inhabits; there is hardly an event in life to man, woman or child, or even domestic animals, that may not be influenced for better or worse by the Slow Loris, alive or dead, or by any separate part of it, and apparently one cannot usually tell at the time, that one is under its supernatural power. Thus a Malay may commit a crime he did not premeditate, and then find that an enemy had buried a particular part of a Loris under his threshold, which had, unknown to him, compelled him to act to his own disadvantage. Its fur is used to cure wounds, and a sailing ship with a live Loris on board is said never to be becalmed. But its life is not a happy one, for it is continually seeing ghosts; that is why it hides its face in its hands."

This is a well-defined race of N. COUCANG, characterized by absence of face markings, and the general gray color distributed generally, but with a slight reddish tinge on the flanks and outer edge of limbs.

NYCTICEBUS HILLERI Stone and Rehn.

Nycticebus coucang hilleri Stone and Rehn, Proc. Acad. Nat. Scien. Phil., 1902, p. 139.

Lemur tardigradus Raffles, Trans. Linn. Soc. Lond., XIII, 1822, p. 247, (nec Linnæus).

Nycticebus hilleri Lyon, Proc. U. S. Nat. Mus., 1906, p. 534.

HILLER'S SLOW LORIS.

Type locality. Batu, Sangar, Tanah Datar, Padangsche Bovenland, Sumatra. Type in Academy of Natural Sciences of Philadelphia.

Geogr. Distr. Sumatra.

Genl. Char. Differs from N. MALAIANUS in the more strongly marked dorsal line, and the predominance of chestnut brown in the general coloration. From N. JAVANICUS it is distinguished by the less defined head bars, and the brown crown patch which grades away into the surrounding tint.

Color. Upper parts reddish cinnamon washed with écru, to a pale gray tinged with red in other specimens; dorsal line distinct seal brown; crown patch mars brown; head bars not distinct and merging into the hoary tint of the head; orbital ring black; stripe on nose and forehead between eyes pure white; cheeks whitish with paler red tinge; throat silvery gray; under parts pale wood brown with a slight reddish tinge; limbs and arms isabella color with a reddish tinge; legs like back; hands dark gray; feet reddish cinnamon. Ex type Academy of Natural Sciences of Philadelphia.

Measurements. Skull: total length, 62; Hensel, 49; zygomatic width, 46; palatal length, 15; median length of nasals, 15; length of upper molar series, 18; length of mandible, 41; length of lower molar tooth row, 16. Ex type Academy of Natural Sciences of Philadelphia.

Specimens vary greatly and some are yellowish gray, with dorsal line black, base of hairs russet, and the line practically disappearing on the center of back; under parts pale yellowish gray.

NYCTICEBUS MENAGENSIS Lydekker.

Nycticebus menagensis Lydekker, Zool. Record, XXIX, 1893, p. 25, Mamm.

——————— ? *menagensis* Nachtrieb, Zool. Anzeig., XV, 1892, p. 147; Thos., Ann. Mag. Nat. Hist., I, 1908, 8th Ser., p. 469; Lyon, Proc. Biol. Soc. Wash., XXII, 1909, p. 89.

PHILIPPINE SLOW LORIS.

Type locality. ——————— ?. Native name *Cocane.*

Geogr. Distr. Philippine Islands.

Genl. Char. Head round; snout short and flat; eyes brown, large and round, and slightly prominent; ears about 9/16 in. and hardly projecting beyond hair of head. Neck so short as to give head appearance of being set squarely on shoulders. Nails of hands flat. Hind legs very crooked, (bowed) with feet turned sharply inwards. General color light rufous, hairs being dark at base, then gray changing to light rufous, with very short gray tips.

"White line between eyes extending backward 1 in. from base of nose. Face around eyes dark rufous, the markings extending upwards on forehead. The effect produced is a heart-shaped mark of dark rufous on face, the point of heart being on forehead, the eyes occupying two lobes and separated by the white mark which does not run to tip of heart. Sides of head at back, and of neck, have hairs broadly tipped with gray. Broad stripe of dark brown extends backward for 5½ in. along spine tapering to a point. Hairs of arms lighter rufous than that of back. Back of head gray, nearly white. Back of feet grayish. Hair on back of body, arms and legs thick and soft, making a fine fur like that of GALEOPITHECUS. On under surface of body hair is thinner and somewhat lighter in color than on back. About the genitals is buffy white.

Measurements. "Total length, 11½ in. Tail, ⅝ in."

"This curious little animal is known to the natives of the region it inhabits as *cocane.* An adult specimen from which the description was taken, was kept alive by us for seven days. Its movements were sluggish except in biting when its sudden and unexpected activity proved a painful surprise. It moved with equal ease along the upper and lower sides of a small branch or rope, and progressed quite as rapidly backward as forward. On the floor it was not at home and presented a most ludicrous appearance, tumbling along on all fours with feet nearly as far apart as those of a turtle, and its body barely raised from the boards. It spent most of the day asleep, rolled up into a furry ball with its head buried between its thighs. If disturbed when actively climbing about, it had a curious way of folding its hands over its eyes and from hence earned the name of 'shame face' which it shares with the *Tarsius spectrum,* (T. PHILIPPINENSIS). It had two notes, a low complaining grunt, and a sharp squeal. During its confinement it took little food, turning up its nose at lemons, but occasionally eating a little banana or egg. We had no insects or small mammals to offer it. In drinking, it lapped up the water like a dog. After five days of semi-starvation its strength seemed almost unimpaired, and it showed remarkable tenacity of life."

The above was taken from the Zoologischer Anzeiger, ostensibly by Dr. Nachtrieb, but he in a letter to Dr. Lyon disclaimed the authorship and stated that the article was probably by Mr. Dean Worcester. Having no genus the name could not stand, but the specific name, MENAGENSIS, was afterwards coupled with NYCTICEBUS by *Trouessart, †Stone and Rehn, and ‡Lydekker (l. c.) and so it came properly into the species of that genus.

NYCTICEBUS PYGMÆUS Bonhote.

Nycticebus pygmæus Bonhote, Proc. Zool. Soc. Lond., 1907, p. 4, pl. II, figs. 1, 2.

PIGMY SLOW LORIS.

Type locality. Nha Trang, Annam. Type in British Museum.

Genl. Char. Size small; tail a mere knob; hair silky; second upper molar largest; lower third molar largest.

Color. Orbital rings dark brown; stripe from forehead between eyes to nose, yellowish white; top of head, back of neck and dorsal region cinnamon; rest of upper parts, flanks and outer side of limbs, pale cinnamon; under parts gray washed with cinnamon. Ex type British Museum, Juv.

Measurements. Length of head and body, (skin), about 185; foot, 40. Skull: occipito-nasal length, 46; Hensel, 34; zygomatic width, 25; intertemporal width, 18; palatal length, 15; breadth of braincase, 25; median length of nasals, 11; length of upper molar series, 14; length of mandible, 25; length of lower molar series, 14. Ex type British Museum, Juv.

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*Cat. Mamm. I, p. 63, 1898.

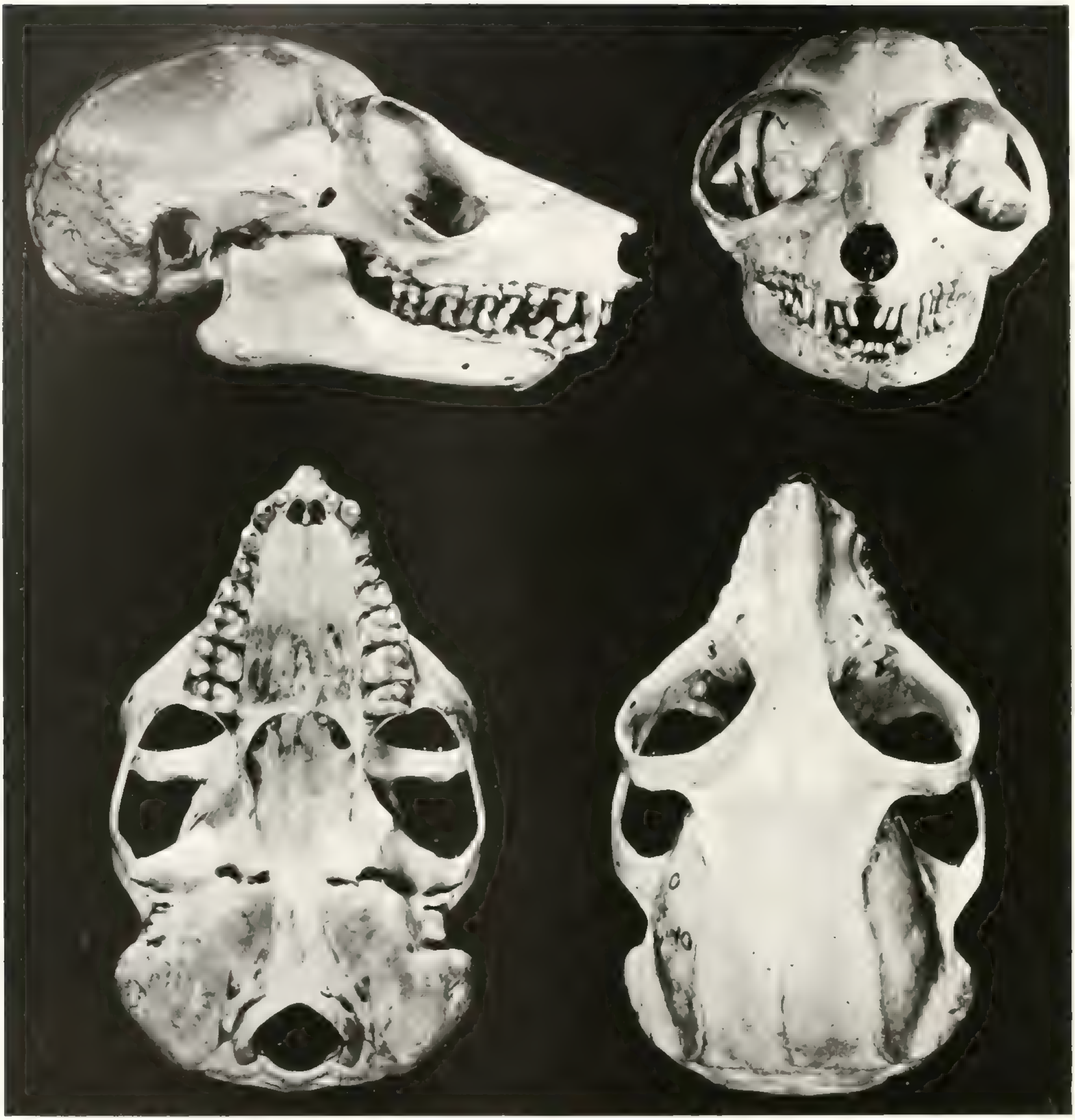
†L. C. p. 138.

‡L. C. p. 345, Zool. Rec. 1893, p. 25.

Adult. Orbital rings seal brown; stripe on nose to forehead, and sides of head and upper lip silvery gray, rest of face and top of head rufous; dorsal stripe from nape to middle of lower back rufous grading into brownish black upon the back; upper parts russet or brownish, variable in individuals, with quantities of silvery white hairs in some specimens, intermingled on shoulder and upper back; flanks buffy, paler than back; upper side of arms ochraceous, with silvery white hairs mingled with the darker ones; legs buff, hairs tipped with silvery white; under parts, plumbeous at base, apical portion ochraceous; hands and feet silvery white.

Measurements. Total length head and body, 205; foot, 50. Skull: total length, 52.2; occipito-nasal length, 52.1; intertemporal width, 18.9; Hensel, 40.8; zygomatic width, 38.4; median length of nasals, 16.4; palatal length, 16.4; length of upper molar series, 16.4; length of mandible, 36.1; length of lower molar series, 14.

Several adults in British Museum received after publication of the species from the same locality as type. This type is a young animal probably half grown. The hair or down is very silky, and of a uniform pale cinnamon color, clear cinnamon on the head and dorsal region. The ears are small, black, naked at the tips which are visible, the basal portion being hidden in the fur; hands and feet are small, the latter well covered with hair and the nails of a yellowish white color.



ARCTOCEBUS CALABARENSIS.

No. 0.11.30.1. Brit. Mus. Coll. ½ larger than Nat. Size.

GENUS 3. ARCTOCEBUS. THE ANGWANTIBO.

$$\text{I. } \frac{2-2}{2-2};\quad \text{C. } \frac{1-1}{1-1};\quad \text{P. } \frac{3-3}{3-3};\quad \text{M. } \frac{3-3}{3-3} = 36.$$

ARCTOCEBUS Gray, Proc. Zool. Soc. Lond., 1863, p. 150. Type *Perodicticus calabarensis* Smith.

Body rather slender; head oval; muzzle blunt, dog like; eyes large; lower phalanges of hands and feet, except of thumb, united in the skin; two upper joints free; index finger reduced to a tubercle, without a nail. Limbs subequal, the hind ones being slightly longer than the fore limbs. The feet are larger than the hands; the great toe has a rather large fleshy tubercle at its base on the inner side, and is opposable to the other toes; the nails are thin and flat except that of the second toe which is like a claw, being thin, convex and acute. Ears erect; two transverse ridges lie above the auditory meatus, with fine hairs on the inner margins standing upright. Unlike the species of the genus PERODICTICUS, the processes of the cervical vertebræ do not project through the skin. Tail rudimentary. Anterior upper molars with four cusps, and oblique ridges; last upper molar with three cusps; last lower molar has five cusps. The species of this genus are nocturnal in their habits and move about but seldom during the day, and it is on this account, probably, that hardly anything has been recorded of their mode of life.

KEY TO THE SPECIES.

A. Great toe opposable and with a tubercle at base.
  a. General color dark brown.................*A. calabarensis.*
  b. General color bright golden red................*A. aureus.*

ARCTOCEBUS CALABARENSIS (Smith).

Perodicticus calabarensis Smith, Proc. Roy. Phys. Soc. Edinb., 1860, p. 172, figs. 1, 2; Matschie, Mitth. Geog. Ges. Natur. Mus. Lübeck, 1894, p. 132, fig.; Forbes, Handb. Primates, I, 1894, p. 27; Forsyth Major, Proc. Zool. Soc. Lond., 1901, p. 136.

Arctocebus calabarensis Gray, Proc. Zool. Soc. Lond., 1863, p. 150; Huxley, Proc. Zool. Soc. Lond., 1864, p. 314, pl. XXVIII; F. Major, Proc. Zool. Soc. Lond., 1901, p. 136, fig. 32.

Nycticebus calabarensis Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 287.

CALABAR POTTO. Native name *Angwantibo.*

Type locality. Old Calabar, West Africa.

Geogr. Distr. Old Calabar, West Africa.

Genl. Char. Mammæ three pair, postaxial, pectoral and abdominal.

Color. General color of body above, and top of head dark brown, lighter on the sides of the head, face darker; stripe from forehead down the nose, white; under parts of body and inner side of limbs, grayish white.

Measurements. Skull: occipito-nasal length, 55; Hensel, 44; zygomatic width, 33; intertemporal breadth, 18; palatal length, 19; width of braincase, 25; median length of nasals, 16; length of upper molar series, 17; length of mandible, 34; length of lower molar series, 16.

ARCTOCEBUS AUREUS de Winton.

Arctocebus aureus de Winton, Ann. Mag. Nat. Hist., IX, 7th Ser., 1902, p. 47; Bates, Proc. Zool. Soc. Lond., 1905, p. 72.

GOLDEN POTTO.

Type locality. Benito River, 50 miles from mouth; 500 to 1,000 feet elevation; French Congo, West Africa. Type in British Museum.

Geogr. Distr. French Congo, West Africa; range unknown.

Genl. Char. Smaller than A. CALABARENSIS; tail very short, terminal hairs stiff, compressed; fifth finger reaches only just beyond the first joint of fourth finger. Skull: premaxillæ project in front of incisors; incisive foramina very small.

Color. Upper parts bright golden red, beneath paler reddish yellow suffused with ashy gray. Ex type British Museum.

Measurements. Total length, 270; tail, 18; hind foot, 38; ear, 30, (Collector). Ex type British Museum. De Winton states the skull was much damaged.

This species described by de Winton from an unique example collected by Mr. Bates, is quite unlike in general appearance the only other known form of the genus. Unfortunately the skull could not be found in the British Museum Collection. Mr. Bates says (l. c.) "The single specimen I sent to the Museum is the only one of this animal I have ever seen. I found it in a village on the Benito River where it had just been killed by a native, who did not know what to call it. However I have sometimes heard from natives of a rare beast like the Potto, which must be the same."

GENUS 4. PERODICTICUS. POTTOS.

$$\text{I. } \frac{2-2}{3-3}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{3-3}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 36.$$

PERODICTICUS Bennett, Proc. Zool. Soc. Lond., 1831, p. 109. Type *Perodicticus geoffroyi* Bennett = *Nycticebus potto* Geoffroy.
Potto Less., Spec. Mamm., 1840, pp. 207, 237.

Tail very short, distinct; hands and feet large; fingers and toes free at ends; index finger rudimentary without a nail, apices of vertebræ, except of neck, projecting beyond skin. Only one ridge on plane of ear; anterior upper molar with oblique ridges and four cusps; the posterior molar with two cusps; last lower molar with four cusps; lower incisors prominent, projecting.

LITERATURE OF THE SPECIES.

1812. *E. Geoffroy Saint-Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*
The *"Potto"* of Bosman is here named *Nycticebus* potto.

1831. *Bennett, in Proceedings of the Zoological Society of London.*
The genus Perodicticus is here instituted, and *Nycticebus* potto Geoffroy renamed *P. geoffroyi.*

1840. *Lesson, Species des Mammifères Bimanes et Quadrumanes.*
Perodicticus potto is here renamed *Potto bosmani.*

1879. *Bouvier, Guide du Naturaliste.*
Perodicticus edwardsi first described.

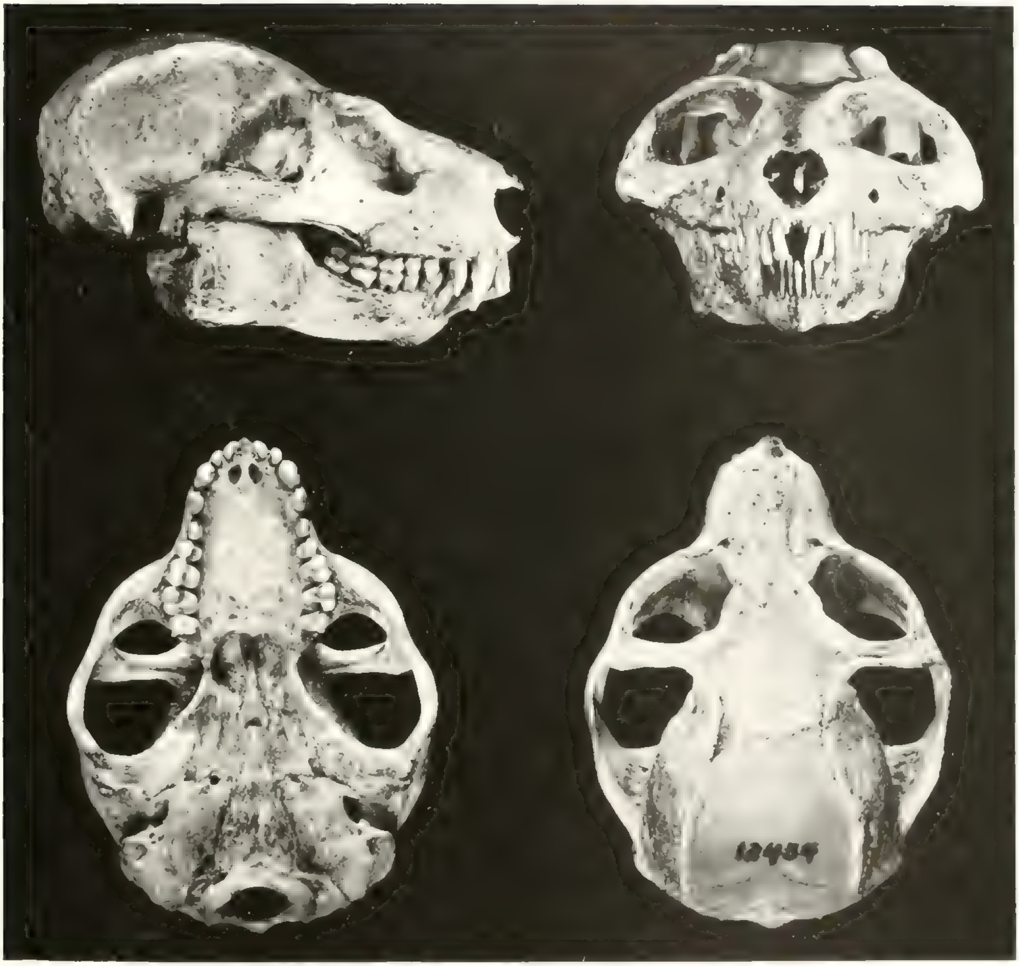
1902. *De Winton, in Annals and Magazine of Natural History.*
Perodicticus edwardsi is renamed *P. batesi.*

1910. *O. Thomas, in Proceedings of the Zoological Society of London.*
Perodicticus ibeanus, and P. ju-ju first described.

1910. *O. Thomas, in Annals and Magazine of Natural History.*
Perodicticus faustus first described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

The range of the members of this genus is not yet definitely known, as but one species has been familiar to Mammalogists for any



Perodicticus potto.

No. 12434 Acad. Nat. Sci. Phil. Coll. Nat. Size.

length of time. Of the four forms recognized, three are found on the western part of the African Continent, one on the eastern. P. POTTO, the most northerly of the known species, is found on the Gold coast to Sierra Leone, but its dispersion is not accurately known. P. JU-JU is a native of Southern Nigeria, and P. EDWARDSI goes from Cameroon into French Congo; and at Irneti, Central Congo, P. FAUSTUS was found. On the east side of Africa in the Kakamega forest within British Territory P. IBEANUS was procured.

KEY TO THE SPECIES.

A. Tail very short, length about one inch; muzzle short, blunt.
  a. Teeth small.
    a.′ Head and neck grayish brown ....*P. potto.*
    b.′ Head and neck drab gray, no black on back...*P. ju-ju.*
    c.′ Head and neck grizzled hoary gray, shoulders and forehead blackish.................*P. ibeanus.*
    d.′ Head and neck drab, hairs tipped with hoary ....*P. faustus.*
  b. Teeth large ....*P. edwardsi.*

PERODICTICUS POTTO (E. Geoffroy).

Potto Bosman, Beschrijv. Guin. Gondk., II, 1704, p. 32, fig. 4.

Nycticebus potto E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 165; Fitzing., Sitzungsb. Meth. Naturw. Akad. Wiss. Wien, 1870, p. 719; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 287.

Perodicticus geoffroyi Bennett, Proc. Zool. Soc. Lond., 1831, p. 109; Major, Proc. Zool. Soc. Lond., 1901, p. 130; Bedd., Proc. Zool. Soc. Lond., 1904, p. 160, fig. II, (Brain).

Potto bosmani Less., Spec. Mamm., 1840, p. 238.

Perodicticus potto Schinz, Syn. Mamm., I, 1844, p. 110; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 15; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 208, tab. VIII; Gray, Proc. Zool. Soc. Lond., 1863, p. 150; Huxley, Proc. Zool. Soc. Lond., 1864, p. 335; Pousarg., Ann. Scien. Nat. Paris, III, 7me Ser., 1891, p. 245; Forbes, Handb. Primates, I, 1894, p. 28; Bedd., Proc. Zool. Soc. Lond., 1895, p. 145, fig. 2; 1904, p. 160, (Brain); Major, Proc. Zool. Soc. Lond., 1901, p. 136, fig. 33.

Stenops potto Pel, Bijdr. Dierk., 1852, p. 41.

BOSMAN'S POTTO.

Type locality. Guinea? West Africa.

Geogr. Distr. Gold Coast to Sierra Leone, West Africa.

Genl. Char. Head short, rounded; hands long; last upper molar short, wide, crown elliptical, two cusps, hind cusps wanting; last lower molar with four cusps.

Color. Head grayish brown, becoming grayer on back of head and neck; upper part reddish brown, darkest on middle of back, hairs with black tips, sides and rump pale brown; outer side of limbs like back; under parts gray sometimes reddish; hands and feet dark brown; ears black.

Measurements. Skull: occipito-nasal length, 65; Hensel, 55; zygomatic width, 48; intertemporal width, 23; palatal length, 23; breadth of braincase, 32; median length of nasals, 18; length of upper molar series, 18; length of mandible, 45; length of lower molar series, 15.

Bosman, who first made known the existence of this animal, gives a quaint description of it and its habits, with a rude drawing. He states, "Draught of a creature, by the *Negroes* called *Potto,* but known to us by the name of Sluggard, doubtless from its lazy, sluggish nature, a whole day being enough for it to advance ten steps forward.

"Some writers affirm, that when this creature has climbed upon a Tree, he doth not leave it until he hath eaten up not only the Fruit, but the leaves entirely; and then descends fat and in very good case in order to get up into another Tree; but before his slow pace can compass this he becomes as poor and lean as 'tis possible to imagine; and if the tree be high, or the way anything distant, and he meets nothing on his journey, he invariably dies of Hunger betwixt one tree and the other. Thus 'tis represented by others, but I will not undertake for the truth of it, though the *Negroes* are apt to believe something like it.

"This is such a horrible ugly Creature that I don't believe anything besides so very disagreeable is to be found on the whole Earth; the Print is a very lively description of it. Its fore feet are very like Hands, the Head, strangely disproportionately large; that from which this Print was taken was of a pale Mouse color, but it was then very young, and his skin yet smooth, but when old, as I saw one at Elmina in the year 1699, 'tis red and covered with a sort of Hair as thick set as Flocks of Wool. I know nothing more of this animal than that 'tis impossible to look on him without Horrour, and that he hath nothing very particular but his odious Ugliness."

Poor Potto! not a very flattering portrait indeed, but the earliest authors not infrequently indulged in similar descriptions of strange and little known animals. The Potto is strictly nocturnal in its habits and would not be likely to go "anything distant" during the daytime, and although its movements are slow and performed with deliberation, it would survive a sufficient length of time to reach a new food supply, and as it is a dweller of trees it is not likely to attempt any considerable journey on terra firma.

PERODICTICUS JU-JU Thomas.

Perodicticus ju-ju Thos., Ann. Mag. Nat. Hist., V, 1910, 8th Ser., p. 351.

NIGERIAN POTTO.

Type locality. Southern Nigeria, Africa. Type in British Museum.

Geogr. Distr. Known only from Nigeria.

Genl. Char. Size about that of P. EDWARDSI; fur close, woolly; bristle hairs practically absent.

Color. Upper part of body drab-gray, under fur gray at base, then dull buffy whitish, the end dark brown; few long hairs with white tips, under parts grayish white, hairs gray at base; outer side of arms and legs drab gray like back; inner side whitish, becoming drab at wrists and ankles; hands and feet drab gray.

Measurements. Total length, 430; tail, 75; foot, 77; ear, 25. Skull: upper length, 66; basal length, 58; greatest breadth, 47; nasals, 17; upper cheek-tooth series, 17.8; molars only, 9; breadth of m^2, 4.1.

The above is taken from Mr. Thomas' description. I have not seen the specimen.

PERODICTICUS IBEANUS Thomas.

Perodicticus ibeanus Thos., Proc. Zool. Soc. Lond., 1910, p. 536.

Type locality. Kakamega forest, near Mt. Elgon, British East Africa. Type in British Museum.

Genl. Char. "Fur soft and thick, the wool hair on the back nearly 20 mm. in length, and the straight hairs 25-26 mm. Nasals very short; canines rather slender, anterior premolar long, pointed, two-thirds the height of the canine. Other cheek teeth all very small; second molar smaller than the first. Anterior lower premolar longer than posterior."

Color. "General color grizzled ashy, but the shoulders and fore-back blackish; these dark tips broadening posteriorly so as to make the nape and fore-quarters almost black with a hidden suffusion of dark clay-color. The long bristle hairs of the crown and nape black. Rest of the body, behind the withers, grizzled ashy, the longer hairs dark with grayish white tips, the woolly under fur dark slaty basally, then broadly clay-colored, with dark tips. Under surface grayish, not sharply defined, the hairs slaty basally, dull grayish white terminally (gray No. 8). Arms and legs grizzled ashy like the body; hands and feet brownish. Tail comparatively long, cylindrical, ashy gray."

Measurements. "Total length, 407; tail, 68; foot, 76; ear, 25. Skull: upper length, 64; basal length, 55; greatest breadth, 46; nasals, 14.2x5.3; interorbital space, 9.3; length of cheek tooth series, 16.5; of molars only, 8.5; breadth of m^1 3.8; of m^2 3.2."

I have not seen this species.

PERODICTICUS FAUSTUS Thomas.

Perodicticus faustus Thos., Ann. Mag. Nat. Hist., VI, 1910, 8th Ser., p. 426.

Type locality. Irneti, Bompona, R. Maringa, Central Congo, Africa. Type young female in British Museum.

Genl. Char. "Intermediate between the gray P. IBEANUS and the brown species of the West Coast."

Color. Hairs of upper parts slaty at base then drab and tips black; a number of hoary tipped hairs behind shoulders; head, arms, legs and under parts dull drab; hoary tipped hairs on outer side of forearms and thighs; hands and feet gray; tail drab ticked with hoary.

Measurements. "Total length, 318; tail, 38; foot, 51; ear, 23, (Collector). Skull: upper length, 61; basal length, 53; greatest breadth, 41; nasals, 12.5x4; palatal length, 23; upper cheek tooth series, 18.7; molars only, 10.2; m^3 3.4x4.7."

I have not seen this example.

PERODICTICUS EDWARDSI Bouvier.

Perodicticus potto edwardsi Bouv., Guide du Natural., 1879, p. 1.

Perodicticus batesi De Winton, Ann. Mag. Nat. Hist., II, Ser. X, 1902, p. 48.

MILNE-EDWARDS POTTO.

Type locality. French Congo, West Africa. Type not in Paris Museum.

Geogr. Distr. Cameroon to the French Congo, West Africa.

Genl. Char. Variable in color, long hairs on occiput and neck.

Color. Head, hind part and sides of neck; upper back and shoulders yellowish brown; rest of upper parts, flanks, and limbs black, tinged on limbs with brownish black; forehead and nose yellowish brown; inner side of arms and under parts of body yellowish white; inner side of legs blackish brown; hands and feet brownish black; tail rudimentary, black. Ex specimen in Paris Museum.

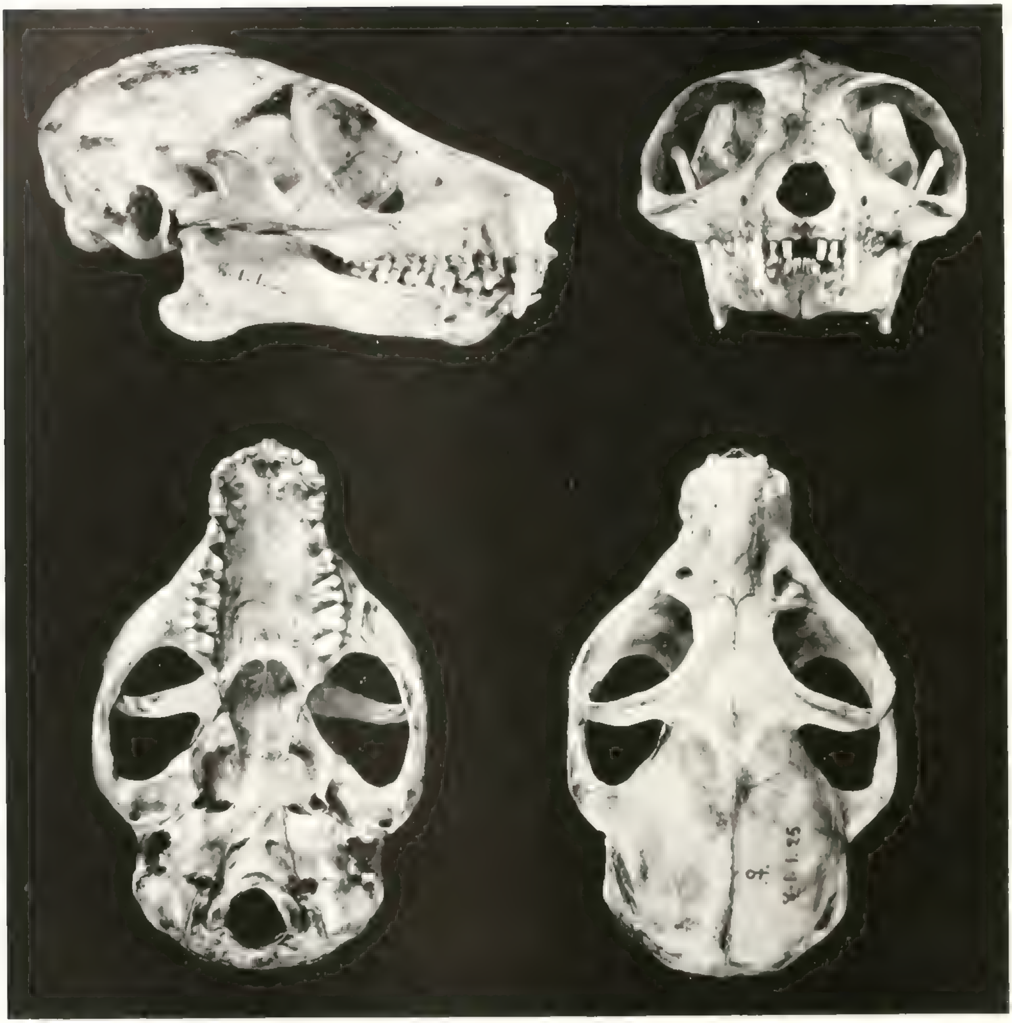
Type of *P. batesi* in British Museum. Entire upper parts, limbs, hands, feet and tail rich chestnut red; hairs tipped with black on the shoulders and upper back; numerous long hairs both black and white, on occiput; nose brownish black; throat and inner side of arms pale rufous; chest and abdomen reddish gray; lower portion of abdomen and inner side of legs reddish.

Measurements. Total length, 380; tail, 40; hind foot, 75; ear, 23. Skull: occipito-nasal length, 63; Hensel, 54; zygomatic breadth, 21; palatal length, 20; breadth of braincase, 30; median length of nasals, 15; length of upper molar series, 18; length of mandible, 29; length of lower molar series, 16. Ex type *P. batesi* in British Museum.

In color this is a very variable species, examples from the same locality differing in this respect from each other. There are six specimens of this Potto in the British Museum from the Benito and Ja rivers in the French Congo, West Africa, differing very considerably from each other in the hue and marking of their coats. The prevailing color above is black and chestnut red, but the underparts vary from dark gray mixed with red to ashy gray, and one mounted example from the Benito River, which however may have faded somewhat, has no black at all on the upper parts which are yellowish gray about the shoulders, becoming red on lower back and thighs. The ends of the tails in some specimens are black as described by Bouvier. It would seem to be quite evident from an examination of the examples in the Paris and British Museums that P. EDWARDSI and P. BATESI represent the same species of which Bouvier's animal is one of the dark style, and the type of P. BATESI one of the pale hue.

Mr. Bates, who learned about this animal in Southern Cameroon, although on account of the density of the forests, he was unable to meet with one himself, states that "the two or three species of PERODICTICUS of which the names have been sent to me I have not learned to distinguish with certainty; in the little I have to say I must mention them together. They are found in the daytime curled up asleep in the trees, tightly clinging to a branch. So tight is their grip of the branch that specimens have sometimes come to me mutilated in the hands, the natives who captured them declaring that it was only by cutting the fingers that they could loosen the animal's hold.

"Pottos are sometimes caught in traps placed on a horizontal pole or bridge crossing on an open place between two pieces of forest, such as a narrow place in a garden clearing or a stream. The animal crosses on a pole in preference to descending to the ground. One specimen was killed at night on the roof of a house to which it seemed to have wandered from the overhanging plantain tops."



GALAGO CRASSICAUDATUS.

No. 8.1.1.25. [illegible] Nat. Size.

Subfamily 2. Galaginæ.

GENUS 1. GALAGO. THE GALAGOS. BUSH BABYS.

$$\text{I. } \frac{2-2}{2-2};\quad \text{C. } \frac{1-1}{1-1};\quad \text{P. } \frac{3-3}{3-3};\quad \text{M. } \frac{3-3}{3-3} = 36.$$

GALAGO E. Geoff., Mag. Encyclop., 2me Année, I, 1796, p. 49, pl. I. Type *Galago senegalensis* E. Geoffroy.

Chirosciurus Cuv. and Geoff., Mag. Encyclopéd., No. VI, 1795. (nomen nudum).

Macropus Fisch., Mém. Soc. Imp. Moscou, I, 1811, V, 1817, p. 402, (nec Shaw, Marsupials).

Otolicnus Illig., Prodr. Syst. Mamm. et Avium, 1811, p. 74.

Galagoides A. Smith, S. Afr. Quart. Journ., 2nd Ser., II, 1833, No. 1, p. 32.

Hemigalago Dahlb., Zool. Stud., I, Tredje Haftet, 1857, pp. 224, 225, 230, Tab. X.

Otolemur Coquerel, Rev. Mag. Zool., 2nd Ser., XI, 1859, pp. 458, 460, pls. XVII, XVIII.

Callotus Gray, Proc. Zool. Soc. Lond., 1863, p. 145.

Otogale Gray, Proc. Zool. Soc. Lond., 1863, p. 139, figs. in text.

Euoticus Gray, Proc. Zool. Soc. Lond., 1863, pp. 140, 141, I, fig. in text, pl. XIX.

Sciurocheirus Gray, Proc. Zool. Soc. Lond., 1872, p. 857, fig. 5.

Fur thick, woolly; eyes large, approximate; ears large, hinder edge contractile at will of the animal; fingers and toes long and slender, with terminal discs; tail long, thick, bushy. Skull: braincase round, high, broad; muzzle short; squamosal region inflated; upper incisors small subequal, with posterior cusp on cingulum; diastema posterior to canine; first upper premolar with one main cusp and two supplementary ones on each side; middle premolar with three cusps; last molar, in some forms, is tricuspidate, in others quadricuspidate; the last internal cusp wanting. Tarsus long, calcaneum over one third the length of tibia; tail longer than the body.

The species of this genus are all African, and are remarkable for their large ears, and elongated tarsi, the latter much exceeding in length the arms. They have four incisors in both the upper and lower jaws, and in size are about equal to a small rat. Various genera have been proposed for these animals, some of which may be advantageously used as subgenera to include certain species with special affinities for one another, but the groups can only be properly separated into two, GALAGO and HEMIGALAGO, distinguished by the presence or absence of a cusp on the heel of the second upper premolar.

LITERATURE OF THE SPECIES AND SUBSPECIES.

1796. *E. Geoffroy St. Hilaire, in Magasin Encyclopédique.*
In this publication GALAGO SENEGALENSIS is first described from Senegal, West Africa.

1806. *Fischer, in Mémoires de la Société Imperiale des Naturalistes de Moscou.*
HEMIGALAGO DEMIDOFFI first described from Senegal, West Africa, and G. SENEGALENSIS redescribed as *G. geoffroyi.*

1812. *E. Geoffroy, in Annales du Muséum d'Histoire Naturelle, Paris.*
In a paper entitled "Suite au Tableau des Quadrumanes," this author mentions four species under the genus GALAGO, viz., *G. madagascariensis* which is a MICROCEBUS, probably M. MURINUS; G. SENEGALENSIS; G. CRASSICAUDATUS described for the first time, and H. DEMIDOFFI, which belongs to a different genus HEMIGALAGO.

1820. *Desmarest, Mammalogie.*
In this work under the genus GALAGO, five species are recorded, only three of which can be retained, viz., G. CRASSICAUDATUS; G. SENEGALENSIS; and H. DEMIDOFFI. The other two are *G. potto* = PERODICTICUS POTTO E. Geoff., and *G. madagascariensis* = MICROCEBUS MURINUS (Miller).

1837. *Waterhouse, in Proceedings of the Zoological Society of London.*
GALAGO ALLENI first described from Fernando Po.

1839. *Ogilby, in Proceedings of the Zoological Society of London.*
GALAGO GARNETTI described as *Otolicnus garnetti* from Port Natal, East Africa.

1839. *A. Smith, Illustrations of the Zoology of South Africa.*
GALAGO SENEGALENSIS E. Geoff., renamed *Galago moholi.*

1840. *Wagner, Schreber, Säugthiere, Supplement.*
In this volume under the term *Otolicnus* Wagner gives *O. galago* Schreb., citing only Plate XXXVIII B, but no page. This plate is lettered *G. senegalensis,* and he makes Geoffroy's

G. SENEGALENSIS a synonym. The fact is Schreber never described a species by the name *galago,* and therefore the position is exactly reversed, *galago* Schreber being non-existent, *senegalensis* Wagner becomes a synonym of Geoffroy's species. Two other species are given for the genus, O. CRASSICAUDATUS and O. ALLENI.

1840. *Lesson, Species des Mammifères Bimanes et Quadrumanes.* Two species and three varieties are given in this List. G. CRASSICAUDATUS E. Geoff., *G. acaciarum* = G. SENEGALENSIS Fischer; *G. acaciarum* var. *A. alleni* = G. ALLENI Waterh.; *G. acaciarum* var. B. *senegalensis* = G. SENEGALENSIS Fischer; *G. acaciarum* var. C. *sennaariensis* = G. SENAARIENSIS Lesson.

1842. *Sundevall, in Kongliga Svenska Vetenskaps Akademie.* GALAGO SENNAARIENSIS Less., is here renamed *G.* (*Otolicnus*) *teng.*

1844. *Van der Hoeven, in Tijdschrift voor Natuurlijke Geschiedenis en Physiologie.* Under *Otolicnus,* here employed as a genus, five species are given: *O. galago* = G. SENEGALENSIS; *O. alleni* = G. ALLENI; *O. crassicaudatus* = G. CRASSICAUDATUS; *O. garnetti* = G. GARNETTI; and *O. madagascariensis* = DAUBENTONIA MADAGASCARIENSIS.

1855. *Wagner, Schreber, Säugthiere, Supplement.* Under *Otolicnus* six species are here given, viz.: *O.* CRASSICAUDATUS (Geoffroy); *O.* GARNETTI (Ogilby); *O. galago* Schreber, non-existent; *O.* ALLENI (Waterhouse); *O. minor* Gray, (a MICROCEBUS); and *O.* DEMIDOFFI (Fischer).

O. galago Schreb., non-existent, is divided into three sections, but the sections are treated as synonyms. These are *O. teng* (Sundevall), with SENNAARIENSIS as its synonym; *O.* SENEGALENSIS (Geoffroy); and *O. moholi* (Smith), with a new name *australis,* as its synonym, which is synonymous with G. SENEGALENSIS Geoffroy; *O. minor* (Gray), is a MICROCEBUS and synonymous with M. MURINUS (Miller).

1856. *R. G. Dahlbom, Zoologiska Studier afhandlande Djurrikets Naturliga Familijer.* Four species are here recognized in the genus GALAGO: G. CRASSICAUDATUS; G. ALLENI; G. SENEGALENSIS; and *G. conspicillatus* = G. SENEGALENSIS.

1857. *Le Conte, in Proceedings of the Academy of Natural Sciences of Philadelphia.*
GALAGO ELEGANTULUS first described from Cameroon, West Africa.

1859. *Coquerel, in Revue et Magasin de Zoologie.*
GALAGO CRASSICAUDATUS redescribed as *Otolemur agisymbanus* from Agisymbana Island, East Africa.

1861. *Du Chaillu, in Proceedings Boston Society of Natural History.*
Galago elegantulus apicalis described as *Otolicnus apicalis.*

1863. *J. E. Gray, in Proceedings of the Zoological Society of London.*
Four forms were here first described; GALAGO MONTEIRI as *Callotus monteiri* from Cuio Bay, West Africa; *Galago alleni gabonensis* as *Galago alleni* var. *gabonensis* from the Gaboon. *Galago elegantulus pallidus* as *Galago pallidus* from Fernando Po, and *Galago sennaariensis* from Sennaar, Eastern Africa.

1864. *J. E. Gray, in Proceedings of the Zoological Society of London.*
Galago monteiri kirki first described as *Otogale crassicaudata* var. *kirki,* from Quillimane, East Africa.

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in the British Museum.*
In his tribe *Galagonina* the Author arranges the species of GALAGO in two genera, *Otogale,* and *Galago.* In the first are placed GARNETTI; CRASSICAUDATA; MONTEIRI and PALLIDA; and in the second are included ALLENI; *moholi* = SENEGALENSIS; SENEGALENSIS; SENNAARIENSIS and DEMIDOFFI. The four species of the *Otogale* group are recognized as valid at the present time, but of those given under GALAGO, *moholi* is a synonym of SENEGALENSIS Geoff., the name *sennaariensis* is antedated by Lesson in 1840. Three species are mentioned as not seen by the Author, *G. conspicillatus* = SENEGALENSIS Geoff., *O. peli* Temm., = HEMIGALAGO DEMIDOFFI Fischer, juv. and *O. senegalensis* Peters, = *G. s. mossambicus* Peters.

1876. *Schlegel, Muséum d'Histoire Naturelle des Pays-Bas, Simiæ.*
Five species are included in the genus GALAGO, viz.: G. CRASSICAUDATUS; G. GARNETTI; G. ALLENI; G. SENEGALENSIS; and H. DEMIDOFFI. G. MONTEIRI is considered to be merely a pale variety of G. CRASSICAUDATUS; the range of G. SENEGALENSIS is given from Senegambia and Sennaar to Cafraria, the form from Sennaar not being recognized as distinct.

1876. *Peters, in Monatsberichte Königliche Preussen Akademie der Wissenschaften, Berlin.*

Three forms described for the first time GALAGO LASIOTIS from Mombassa, East Africa. *Galago alleni cameronsis,* as *Galago alleni* var. *cameronensis;* and GALAGO MOSAMBICUS from Mozambique.

1876. *Matschie, in Sitzungsberichte Naturforschender Freunde zu Berlin.*

GALAGO ZANZIBARICUS first described from Zanzibar.

Peters, in Monatsberichte Königliche Preussen Akademie der Wissenschaften, zu Berlin.

H. DEMIDOFFI young, redescribed as *Otolicnus pusillus.*

1894. *M. E. de Pousargues, in Nouvelles Archives du Muséum d'Histoire Naturelle de Paris.*

A review of the genus GALAGO is here given, with a full description of H. ANOMURUS for the first time. The Author accepts three sub-genera, *Otolemur, Otolicnus* and HEMIGALAGO, and reviews the different forms belonging to each and discusses their various claims for distinct rank. He recognizes the following as species. Under *Otolemur* he accepts G. CRASSICAUDATUS; G. MONTEIRI; G. GARNETTI; and *G. agisymbanus* = G. CRASSICAUDATUS. In *Otolicnus* he gives G. ELEGANTULUS; G. SENEGALENSIS and G. ALLENI; and in HEMIGALAGO he places *G.* ANOMURUS and *G.* DEMIDOFFI.

The Author labored under the disadvantage of not having a personal knowledge of many of the forms he rejected, which, if he had had the opportunity of examining might have caused him to reach different conclusions in some cases.

1901. *Thomas, in Annals and Magazine of Natural History.*

GALAGO GALLARUM first described from the Webi Dau, Galla country, East Africa.

1904. *Thomas, in Proceedings of the Zoological Society of London.*

Hemigalago demidoffi poensis first made known from Banterberi, Fernando Po.

1906. *Matschie, in Sitzungsberichte Naturforschender Freunde zu Berlin.*

GALAGO PANGANIENSIS described as *Otolemur panganiensis* from Pangani River, East Africa; and GALAGO BADIUS first characterized from Ugalla River, East Africa.

1907. *Thomas and Wroughton, in Proceedings of the Zoological Society of London.*
Galago granti described from Cogune, near Delagoa Bay, East Africa.

1907. *D. G. Elliot, in Annals and Magazine of Natural History.*
Six species of Galago are characterized in this paper, viz.: G. zuluensis from Zululand; G. hindsi from Athi River, British East Africa; *G. alleni batesi* from Como River, Gaboon; G. braccatus from Mount Kilimanijaro; G. nyassæ from Lake Nyassa; and G. thomasi of the sub-genus *Hemigalago,* from Fort Benin, Semliki River, East Africa.

1909. *D. G. Elliot, in Annals and Magazine of Natural History.*
Galago pupulus first described from Yola, Nigeria.
G. Dollman, in Annals and Magazine of Natural History.
G. talboti; *G. elegantulus tonsor;* and *G. braccatus albipes* are here first described.

1912. *Lönnberg, in Annals and Magazine of Natural History.*
G. kikuyuensis first described as *Galago (Otolemur) kikuyuensis.*

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES AND SUBSPECIES.

The Bush Babys, by which name the members of the genera Galago and Hemigalago are known, are found upon the African Continent, between Sennaar and Natal on the east, and Senegal and Portuguese West Africa on the west. They are also natives of the islands of Zanzibar on the east coast, and Fernando Po in the Gulf of Guinea on the west. As is the case with most of the groups among the Primates, it cannot be said that the distribution of the members of these genera are satisfactorily known, and some may have a much greater dispersion than is here recorded. It is quite evident that distinct forms are fairly numerous, but the material at present available is not sufficient, (a number of species or races being represented by only a few examples, and from either a single, or a very limited number of localities), for a definite geographical distribution to be given. Therefore the following ranges assigned to the various members of the genus can only be regarded as approximate, based upon our present rather imperfect knowledge of their habitats, and subject to future rearrangement as the acquisition of more material shall serve to increase our knowledge.

A majority of the various species and races is found on the eastern portion of the Continent, extending from Somaliland, Sennaar and the vicinity of the White Nile below Khartoum on the north, to Mashonaland on the south, including the Island of Zanzibar. In the most northerly part of this eastern section at Faffan, near Harrar in Somaliland G. DUNNI was discovered; G. SENNAARIENSIS is found ranging southward to Ankole west of Victoria Nyanza, and Nyassaland, and then as far as Mashonaland up to an elevation of 5,000 feet. Next, in the Boran Galla country northeast of Lake Rudolph in Abyssinia, G. GALLARUM has been obtained, its range however not having been yet ascertained. At Katwi on the Athi River in British East Africa, G. HINDSI, and at Escarpment Station, G. KIKUYUENSIS have been obtained. From Mombassa on the coast comes G. LASIOTIS, recognizable by the white tip to the tail, but how far it may extend into the interior, or whether it is confined to the forest along the coast has not been determined. In Uganda to the north and west of Victoria Nyanza, H. THOMASI belonging to the genus HEMIGALAGO is found, the species having been taken at Dumo and Fort Beni on the Semliki River. Whether it is confined to Uganda, or extends its range beyond the river into the forests of the Congo Free State is not known. At Kirui, Elgon, 6,000 feet altitude, *G. braccatus albipes* was discovered. German East Africa contains several species of GALAGO, and in the northern part on the heights of Mt. Kilimanjaro, G. BRACCATUS is found. On the banks of the Pangani River not far from the coast G. PANGANIENSIS has been procured, while in the interior on the Ugalla River east of Lake Tanganyika, the rather remarkable species G. BADIUS was discovered. The island of Zanzibar has apparently two species, G. ZANZIBARICUS, and G. CRASSICAUDATUS, the latter under the name of *G. agisymbanus,* but there seem to be no adequate reasons for separating the island form specifically from the animal dwelling on the coast opposite and ranging through the forests as far south as Quilimane, Mozambique, where also G. KIRKI is found. Coming from Nyassaland and extending its range into the interior to Tete on the Zambesi in British Central Africa, G. MOSSAMBICUS occurs. In this district in Nyassaland south of the Lake in the mountains, and also from Zomba to the southeast of Lake Nyassa we have G. NYASSÆ, which ranges southward in Portuguese Southeast Africa to Inhambane. South of this, in the vicinity of Delagoa Bay, G GRANTI is met with. From Zululand comes G. ZULUENSIS, and finally completing the list of eastern and central African species, in Natal we have G. GARNETTI, the most southern member of the genus.

On the western side of the continent, the most northern species is G. SENEGALENSIS from Senegal south to Angola; at Yola, Nigeria, G. PUPULUS has been obtained, and from Cameroon, we have G. CAMERONENSIS, G. ELEGANTULUS, *G. e. pallidus,* and G. ALLENI; *G. elegantulus tonsor* was procured on the Benito River, Guinea. In Equatorial Africa from the mountains, near the Equator, exact locality unknown, *G. e. apicalis* was procured by Du Chaillu; and at Mombuttu, H. DEMIDOFFI was obtained by Emin Pasha. On the Gold Coast H. DEMIDOFFI is found ranging south to Gaboon in French Congo, where also G. ALLENI and *G. a. gabonensis* are met with, and on the banks of the Kemo River in the same Province, *G. a. batesi* and H. ANOMURUS were procured. From Cuio Bay south of Loando, Angola, Portuguese West Africa, G. MONTEIRI, one of the larger members of the genus, was obtained. On Fernando Po, an island in the Bight of Biaffra, Gulf of Guinea, three species dwell, G. ALLENI, *G. elegantulus pallidus,* and *H. demidoffi poensis.*

KEY TO THE SPECIES AND SUBSPECIES.

- A. Second upper premolar, without cusp on heel.
  - *a.* Size large; occipito-nasal length of skull above 50 mm.
    - *a.′* Ears large.
      - *a.″* End of tail not white.
        - *a.‴* Above and on flanks russet, occipito-nasal length of skull 75 mm .... *G. crassicaudatus.*
        - *b.‴* Above mixed broccoli brown and gray, occipito-nasal length of skull 70 mm................ *G. zuluensis.*
        - *c.‴* Above light yellowish brown, occipito-nasal length of skull 64 mm. .... *G. panganiensis.*
        - *d.‴* Above russet; flanks grayish brown; occipito-nasal length of skull 59 mm...................... *G. garnetti.*
        - *e.‴* Above bright chestnut............. *G. badius.*
        - *f.‴* Above gray.
          - *a.⁗* No brown on upper parts.... *G. monteiri.*

d.'''' Brown on upper parts with the gray ....*G. kirki.*
b.'' End of tail white ....*G. lasiotis.*
b.' Ears small.
a.'' Under parts white; tail above pale brown, beneath whitish ....*G. hindsi.*
b.'' Under parts dirty white; tail above dark brown, gradually darkening to blackish towards distal third; paler below ....*G. kikuyuensis.*
b. Size small, occipito-nasal length of skull under 50 mm.
a.' Legs without buff or yellowish.
a.'' Upper parts russet.
a.''' Tail with basal half mixed seal brown and gray, apical half chocolate ....*G. alleni.*
b.''' Tail ashy brown, hairs tipped with silvery gray ....*G. a. cameronensis.*
c.''' Tail basal half iron gray, remainder drab gray ....*G. a. gabonensis.*
d.''' Tail basal half mixed gray and black, apical half black........*G. a. batesi.*
b.'' Upper parts dark cinnamon.......*G. zanzibaricus.*
c.'' Upper parts pale brownish red..........*G. talboti.*
b.' Legs buff or yellowish.
a.'' Upper parts écru drab ....*G. gallarum.*
b.'' Upper parts iron gray ....*G. braccatus.*
c.'' Upper parts ashy gray ....*G. b. albipes.*
d.'' Upper parts pale grayish brown ....*G. dunni.*
e.'' Upper parts broccoli brown ....*G. nyassæ.*
c.' Upper edge only of legs, yellow.
a.'' Upper parts wood brown ....*G. granti.*
b.'' Upper parts dark gray ....*G. sennaariensis.*
c.'' Upper parts cream buff ....*G. senegalensis.*
d.'' Upper parts sooty or brownish gray.
a.''' Rostrum short ....*G. mossambicus.*
b.''' Rostrum long ....*G. pupulus.*
e.'' Upper parts pale cinnamon rufous..*G. elegantulus.*
f.'' Upper parts pale orange ....*G. e. tonsor.*
g.'' Upper parts dark hair brown.......*G. e. pallidus.*
h.'' Upper parts bright russet ....*G. e. apicalis.*

Subgenus 1. Otolemur.

Size large; first upper premolar not canine-shaped; last upper molar tricuspidate, sometimes quadricuspidate; last lower molar quadri- or quinquicuspidate; angle of mandible produced downwards and backwards; tail longer than head and body.

GALAGO CRASSICAUDATUS E. Geoffroy.

Galago crassicaudatus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 166; Desmarest, Mamm., 1820, p. 103; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 34, 11me Leçon; Fisch., Syn. Mamm., 1829, p. 67; Less., Spec. Mamm., 1840, p. 245; I. Geoff., Cat. Primates, 1851, p. 81; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., 1856, fasc. I, pp. 227, 229, pl. VIII, fig. 3; Mivart, Proc. Zool. Soc. Lond., 1864, p. 645; 1873, p. 501; Kirk, Proc. Zool. Soc. Lond., 1864, p. 650; 1873, p. 493; Sclat., Proc. Zool. Soc. Lond., 1871, p. 544; Gray, Proc. Zool. Soc. Lond., 1872, p. 860; Murie and Mivart, Trans. Zool. Soc. Lond., VII, 1872, pp. 1-11, fig. 2, (text), pls. I-VI, (Anatomy); Mivart, Proc. Zool. Soc. Lond., 1873, p. 502, fig. 18; Bedd., Proc. Zool. Soc. Lond., 1891, p. 456; 1895, p. 146, fig. 4, (Brain); Matschie, Sitzungsb. Gess. Natur. Freund., 1892, p. 224; Forbes, Handb. Primates, I, 1894, p. 47; F. Major, Proc. Zool. Soc. Lond., 1901, p. 138, fig. 3, (text); Thos. and Schwann, Proc. Zool. Soc. Lond., 1905, p. 256; Thos. and Wroughton, Proc. Zool. Soc. Lond., 1907, p. 287; 1908, p. 166.

Lemur crassicaudatus Blainv., Ostéog., 1841, Atl., Lemur, pl. VII.

Galago (*Otolicnus*) *crassicaudatus* Schinz., Syn. Mamm., I, 1844, p. 111.

Otolicnus crassicaudatus Wagner, Schreb., Säugth. Suppl., I, 1840, p. 292; 1855, p. 156; Van der Hoeven, Tijdsch. Nat. Gess., 1844, p. 42; Peters, Reise nach Mossamb., 1852-82, p. 5, t. II, IV, figs. 1-5, (Skull); Fitzing., Sitzungsb. Matth.—Naturw. Akad. Wissench, Wien, 1878, p. 730.

Otolemur agisymbanus Coquerel, Rev. Mag. Zool., 1859, p. 459; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, British Museum, 1870, p. 88.

Otogalago crassicaudatus Gray, Proc. Zool. Soc. Lond., 1863, p. 140; Huxley, Proc. Zool. Soc. Lond., 1864, p. 324.

Galago (*Otolemur*) *agisymbanus* Mivart, Proc. Zool. Soc. Lond., 1864, pp. 627-645; Pousarg., Archiv. Mus. Hist. Nat. Paris, VI, 1904, p. 139.

Galago (*Otolemur*) *crassicaudatus* Mivart, Proc. Zool. Soc. Lond., 1864, p. 645.

Galago agisymbanus Kirk, Proc. Zool. Soc. Lond., 1897, p. 952, (Island of Zanzibar).

Galago garnetti Forbes, Handb. of Primates, I, 1894, p. 40. (Part.).

GREAT GALAGO.

Rat of the Cocoanut Palm, (Portuguese); *Gwea,* Native name, *Suikive,* (Zulu); *Garila,* (Inhambane).

Type locality. Unknown. Type in Paris Museum.

Geogr. Distr. East Africa; Ugogo and south to the Zambesi, Portuguese S. E. Africa, (Thos. and Wroughton); Zululand, (Thos. and Schwann); Mozambique, Quilimane, Luabo, (Kirk); Island of Zanzibar.

Genl. Char. Size large; muzzle long, more so comparatively than in the other species of the genus; nose pad with a deep furrow; no membranes between fingers and toes, but all digits have terminal flat discs; ears large, naked; tail long, bushy; neural spines bifurcate laterally.

Color. Nose, forehead, and band around eyes cream buff; cheeks, and beneath ears rusty brown; top of head and back russet, the dorsal line darker; outer side of arms and legs cinnamon; under parts and inner side of legs yellowish white or pale buff; hands and feet dark reddish brown; tail russet, tip sometimes seal brown.

Measurements. Total length, 700; tail, 375. Skull: occipito-nasal length, 75; Hensel, 62; intertemporal width, 117; palatal length, 30; breadth of braincase, 32; length of nasals, 23; length of upper molar series, 22; length of mandible, 51.5; length of lower molar series, 19.

G. agisymbanus appears to be the same as the present species, for I can find no characters upon which they can be separated. Coquerel's type, which is in the Paris Museum, is a young animal. The following is a description taken from it. Head and entire upper parts, and outer side of limbs dull russet, inclining to rusty on top of head and forearms; under parts pale greenish yellow; hands and feet blackish brown; tail reddish, inclining to blackish brown on apical portion. The adult is dull brown on the upper parts.

Geoffroy's type is in the Paris Museum, but is so faded that but little of the original color remains. The tail has lost most of the hair on the apical half, and the example is in such a condition that a description of it would only serve to mislead. Kirk states (l. c.) that at Luabo and Quilimane, this species frequents the Mangrove forests and wooded country outside. In captivity it eats flesh, vegetables, fruits and insects; in its native state it is fond of palm wine, robbing the pots used by the natives to collect it. This often leads to its capture when it drinks to excess. During the day it remains quiet in some shaded tree top. At night it is very active, leaping from frond to frond, or crossing from one cocoanut palm to another. Coquerel (l. c.) says that this species, (under the name of *Otolemur agisymbanus*), was brought to him from the interior of the island, while he was staying in Zanzibar, and is common in the forests which cover the northern part. He kept one alive for fifteen days, and it was very gentle. It slept during the day covered by its long tail, but at night it was active and exhibited an extreme petulence. It was fed on fruit but would eat anything, and devoured eagerly meat both raw and cooked.

GALAGO ZULUENSIS Elliot.

Galago zuluensis Elliot, Ann. Mag. Nat. Hist., XX, Ser. 7, 1907, p. 186.

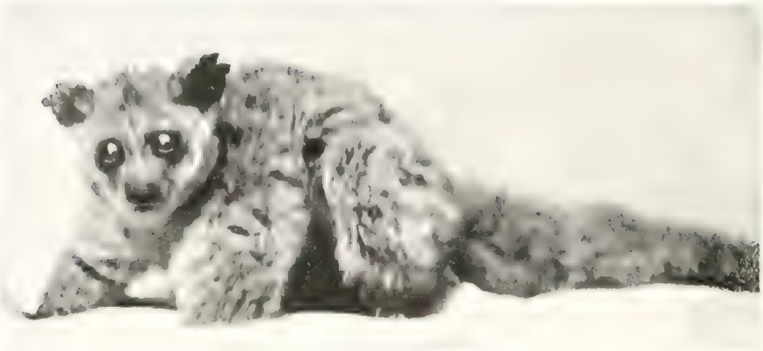
ZULU GALAGO.

Type locality. Zululand. Type in British Museum.

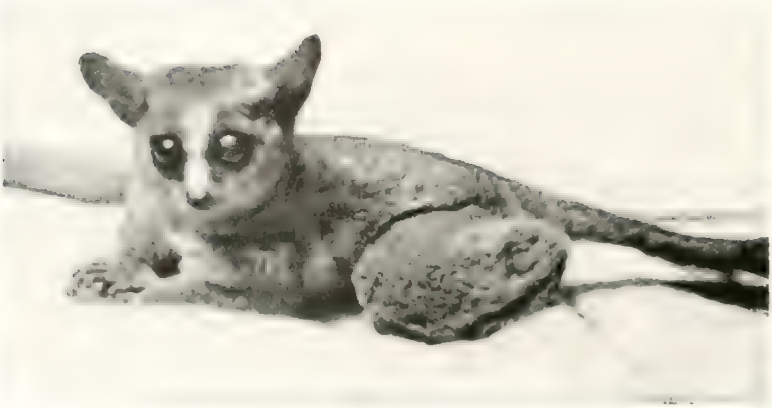
Genl. Char. Similar to G. HINDSI, but browner, and with much larger ears; tail, darker and shorter. Skull: one-third larger; teeth larger. The first and second upper molars have four cusps, two outer and two inner; the last molar only three, two outer and one inner; the lower molars have four cusps, two outer and two inner.

Color. Head and upper parts broccoli brown and gray mixed, darkest on the head; outer side of limbs wood brown; dorsal line washed with mars brown; under parts and inner side of limbs yellowish white; hands and feet grayish brown; tail above pale mars brown, beneath paler. Ex type British Museum.

Measurements. Total length, about 570; tail, 320. Skull: occipito-nasal length, 70; Hensel, 57; zygomatic width, 46; intertemporal width, 19; palatal length, 28; breadth of braincase, 33; median length of nasals, 19; length of upper molar series, 22; length of mandible, 40; length of lower molar series, 23. Ex type in British Museum.



Galago garnetti.



Galago senegalensis.

This species is about the same size in body as G. HINDSI, but has a considerably shorter and much darker tail; it is much darker brown color throughout. When lying side by side, G. HINDSI appears like a gray animal in comparison. The ears of the present species are about a third larger than those of G. HINDSI both in length and width. In their dried and shrunken state they measure 31 mm. in length and 27 mm. in width, while those of G. HINDSI are 24 mm. long by 22 mm. wide, and as the collector's measurement of the ears of the latter species was 39 mm. in length, allowing for the same shrinkage those of G. ZULUENSIS would be 8 or 10 mm. longer. There is such a vast difference in the size of the skull and teeth that they admit of no comparison. In color G. ZULUENSIS is like G. GRASSICAUDATUS, but has a much smaller skull it being midway between G. CRASSICAUDATUS and G. HINDSI with all the differences such a disparity of size would create. G. GARNETTI is of an entirely different color, but about the same size.

GALAGO PANGANIENSIS (Matschie).

Otolemur panganiensis Matschie, Sitzungsb. Ges. Naturf. Freunde, 1906, p. 278.

Type locality. Pangani River, East Africa. Type in Berlin Museum.

Genl. Char. Similar in color to G. LASIOTIS, but paler, and the ears are naked, and there is no white on the apical portion of the tail.

Color. General color of upper parts rather light yellowish brown, with a reddish tinge on dorsal region and outer side of limbs; hind part of thighs ochraceous buff; sides of head, and neck below ears, ochraceous buff; under parts yellowish white; hands and feet reddish brown; tail sooty brown, blackish brown at tip. Ex type Berlin Museum.

Measurements. Total length, 707; tail, 360. Skull: occipito-nasal length, 64; Hensel, 56; zygomatic width, 44.5; intertemporal width, 20; median length of nasals, 20; length of upper molar series, 18; length of mandible, 43; length of lower molar series, 18. Ex type Berlin Museum.

GALAGO GARNETTI (Ogilby).

Otolicnus garnetti Ogilby, Proc. Zool. Soc. Lond., 1838, p. 6; van der Hoev., Tijdsch. Nat. Geschied., 1844, p. 44; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 157; Huxley, Proc. Zool. Soc. Lond., 1864, p. 324; Fitzin., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 744.

Otogale garnetti Gray, Proc. Zool. Soc. Lond., 1863, p. 140, fig. (skull); *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 79; Mivart, Proc. Zool. Soc. Lond., 1864, p. 626.

Galago garnetti Sclat., Proc. Zool. Soc. Lond., 1864, p. 711, pl. XL; Gray, Proc. Zool. Soc. Lond., 1872, p. 860; Anders., Cat. Mamm. Ind. Mus. Calc., Pt. I, p. 26; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 329; Forbes, Handb. Primates, I, 1894, p. 40, (Part.).

Galago (*Otolemur*) *garnetti* Schinz, Syn. Mamm., I, 1844, p. 112; Mivart, Proc. Zool. Soc. Lond., 1864, p. 646; Pousarg., Nouv. Archiv. Mus. Hist. Nat. Paris, VI, 1894, p. 138.

GARNETT'S GALAGO.

Type locality. Port Natal, South East Africa. Type not in British Museum.

Geogr. Distr. Natal, South East Africa.

Genl. Char. Muzzle protruding beyond jaws; ears very long and wide; posterior upper molar having fourth cusp only slightly developed; posterior lower molar with four prominent cusps; pelage uniform above and also beneath.

Color. Entire upper parts of body, outer side of limbs, and inner side from wrist and knee, and tail russet, hairs tipped with golden yellow; hairs on head short, woolly, darker than the back, and with the neck is dark russet, hairs tipped with golden; entire under side of body with chin, throat and inner side of limbs to wrist and knee cream buff; no stripe between eyes; ears flesh color.

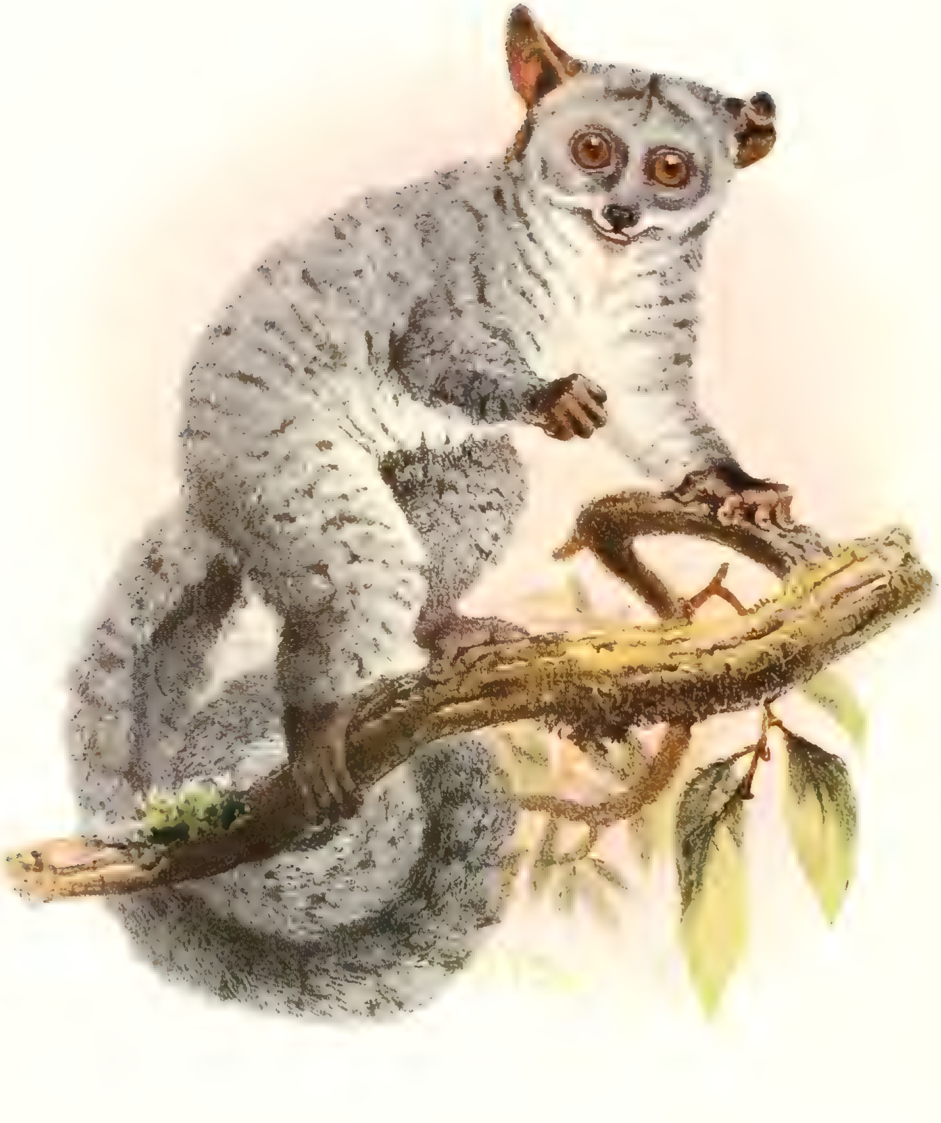
Measurements. Total length, 650; tail, 325. Skull: occipito-nasal length, 59; Hensel, 53; zygomatic width, 41; intertemporal width, 19; palatal length, 25; breadth of braincase, 29; median length of nasals, 14; length of upper molar series, 20; length of mandible, 42; length of lower molar series, 29.

This species is similar to G. CRASSICAUDATUS, but the head and neck are darker. The skull is much smaller with a narrower rostral region, intertemporal region wider, and the upper tooth rows more curving outwardly. Ears smaller.

The type is not in the Collection of the British Museum, and it is not known if it is still existing.

GALAGO BADIUS (Matschie).

Otolemur badius Matschie, Sitzungsb. Gesell. Naturf. Freun., 1905, p. 277.



GALAGO MONTEIRI

Type locality. Ugalla River, German East Africa. Type in Berlin Museum.

Color. Entire body, limbs, hands and feet, bright chestnut, the fur being dark gray at base and tipped with bright chestnut. The tail is wanting in the type.

This very distinct species is about the size of G. LASIOTIS but in its coloring is totally unlike any other known form. The tail is absent, no part having been preserved to give an indication of its coloring. Ex type Berlin Museum.

GALAGO MONTEIRI (Gray).

Callotus monteiri Gray, Proc. Zool. Soc. Lond., 1863, p. 145.

Galago monteiri Bartl., Proc. Zool. Soc. Lond., 1863, p. 231, pl. XXVIII; Sclat., Proc. Zool. Soc. Lond., 1864, p. 711, pl. XL; 1871, p. 544; 1876, p. 413; Mivart, Proc. Zool. Soc. Lond., 1864, p. 346; Gray, Proc. Zool. Soc. Lond., 1872, p. 860; Forbes, Handb. Primates, I, 1894, p. 139.

Galago (Otolemur) monteiri Pousarg., Nouv. Archiv Mus. Hist. Nat. Paris, VI, 1894, p. 139.

MONTEIRI'S GALAGO.

Type locality. Cuio Bay, south of Loando, Angola, West Africa. Type not in British Museum.

Geogr. Distr. Middle coast, West Africa.

Genl. Char. Size large; ears very large, naked on outer apical edges; hairs on face short; feet and toes broad, discs rounded; tail very long.

Color. General hue uniform pale gray over upper part of body, outer side of limbs, and entire tail; orbital ring black; hands and feet dark brownish gray; ears black; middle of breast and abdomen white; flanks grayish white. Some specimens are mouse gray on body and tail.

Measurements. Total length, 1118; tail, 408. Skull: occipito-nasal length, 70; Hensel, 57; zygomatic width, about 40, (broken); intertemporal width, 19; palatal length, 28; breadth of braincase, 31; median length of nasals, 20; length of upper molar series, 23; length of mandible, 47; length of lower molar series, 20.

This is one of the largest species of the genus, with a very long bushy tail. While the color among individuals varies somewhat, the dominant hue is always gray, ranging from a whitish to a mouse gray, with occasionally reddish tints appearing on head and back. The type could not be found in the British Museum. It probably never was in the collection. The identification of this animal as a new species should undoubtedly be placed to the credit of the late Mr. A. D. Bartlett, Superintendent of the London Zoological Society's Gardens, but his MS. having been shown to Dr. Gray, it was included by him in his paper on the species of Lemuroids under Mr. Bartlett's MS. name in an earlier part of the Society's proceedings, and thus became G. MONTEIRI Gray, manuscript names having no standing. Mr. Bartlett had the type alive, and states it was "very gentle and slept much during the day, and fed on *fruit, bread, milk* and other sweet things, particularly bananas. It had the power of turning its ears back and folding them up when at rest. When moving about or in search of food they, (the ears) spread out and stand upward and forward, reminding one of the Aye-Aye; but when folded back and down, the animal's face bears a strong resemblance to the Douroucouli. The pupils of the eyes are oval and vertical."

GALAGO KIRKI (Gray).

Otogale crassicaudata var. *kirki* Gray, Proc. Zool. Soc. Lond., 1864, p. 456.

Galago crassicaudatus Sclat., Proc. Zool. Soc. Lond., 1864, p. 711; Pousarg., Nouv. Archiv. Mus. Hist. Nat. Paris, VI, 1894, p. 138.

Otogale kirki Thomas, Proc. Zool. Soc. Lond., 1894, p. 137; 1896, p. 790.

KIRK'S GALAGO.

Type locality. Quilimane, Mozambique, East Africa. Type in British Museum.

Geogr. Distr. Blantyre, Shiri Highlands, Nyassaland; and Mozambique to Tete on the Zambesi, East Africa.

Genl. Char. Size large, tail bushy, color pale.

Color. General hue pale ashy gray and russet, base of hairs black; cheeks, inner side of limbs and under part of body grayish white; face, crown, nape, middle of back, shoulders, and outer side of arms russet; outer side of legs yellowish gray; hands, feet, and tail, dark broccoli brown. Ex type in British Museum.

Measurements. Skull much broken; occipito-nasal length, 68; zygomatic width, 47; intertemporal width, 18; width of orbits, 19; median length of nasals, 20; length of upper molar series, 21; length of mandible, 45; length of lower molar series, 23. Ex type British Museum.

This animal has the same gray color as G. MONTEIRI and would seem to be more a representative of that species on the eastern coast of Africa, than a near relative of G. CRASSICAUDATUS, which is quite differently colored. It is easily recognized from G. MONTEIRI by the russet coloring on the head and middle of back, and the darker tail. It would seem advisable to recognize it as a distinct species, and not as a race of G. CRASSICAUDATUS as Gray made it. This is one of the largest species of GALAGO, and has a very long and bushy tail. Like other species of the genus it is arboreal and nocturnal in its habits, and is rarely seen during the day, "sleeping in some hollow tree, waking up at sundown, at which time and throughout the whole night its peculiar cry can be heard. At Eshowe it frequents the trees close to the houses, and is said to be extremely fond of fowl's eggs. The specimens secured were shot at night with the aid of a dark lantern, flashing it suddenly into a tree where one was heard calling. This is a favorite method with the natives for obtaining them, by whom the skin is highly valued. Specimens from Natal seem much browner than those from Zululand." (Grant's notes on Zululand Mammals; Thos. and Schwann, l. c.).

In another paper on Mammals from Portuguese South Africa, Thos. and Wrought. (l. c.) quote from Mr. Grant's notes as follows on this species.

"Very common in the forests, where they appear to consort together in small parties. The species has a variety of calls, none of which however are similar to that of GALAGO GARNETTI. Apparently principally vegetarian, and feeding largely on the exudation from the bark of certain trees. Strictly nocturnal, passing the day in hollow trees."

GALAGO LASIOTIS Peters.

Galago lasiotis Peters, Monatsb. K. Preuss. Akad. Wiss. Berlin, 1876, p. 912; Matschie, Sitzungsb. Ges. Natur. Freund., 1892, p. 224.

WOOLLY-EARED GALAGO.

Type locality. Mombassa, East Africa. Type in British Museum.

Genl. Char. Size large; tail, long and bushy, tip white; ears broad, hairy at tip, showing chiefly in the young; fur thick woolly.

Color. Top of head and upper parts of body grayish brown with yellowish tinge; dorsal region darker being a reddish brown, with black hair intermingled; flanks paler yellowish brown; outer and inner sides of limbs russet; sides of head wood brown; throat, chest and under parts white; hands and feet blackish brown; tail Prout's brown with apical portion white; ears hairy to tip, outer edge flesh color, inner yellowish. Ex type Berlin Museum.

Measurements. Total length, 685; tail, 370. Skull: total length, 66; occipito-nasal length, 64; zygomatic width, 43; intertemporal width, 19; median length of nasals, 20.5; length of upper molar series, 21; length of mandible, 43; length of lower molar series, 18. Ex type Berlin Museum.

The present species is darker than G. CRASSICAUDATUS and the limbs slightly redder, but it can at all times be easily distinguished from that species by having the end of the tail white.

GALAGO HINDSI Elliot.

Galago hindsi Elliot, Ann. Mag. Nat. Hist., XX, 7th Ser., 1907, p. 186.

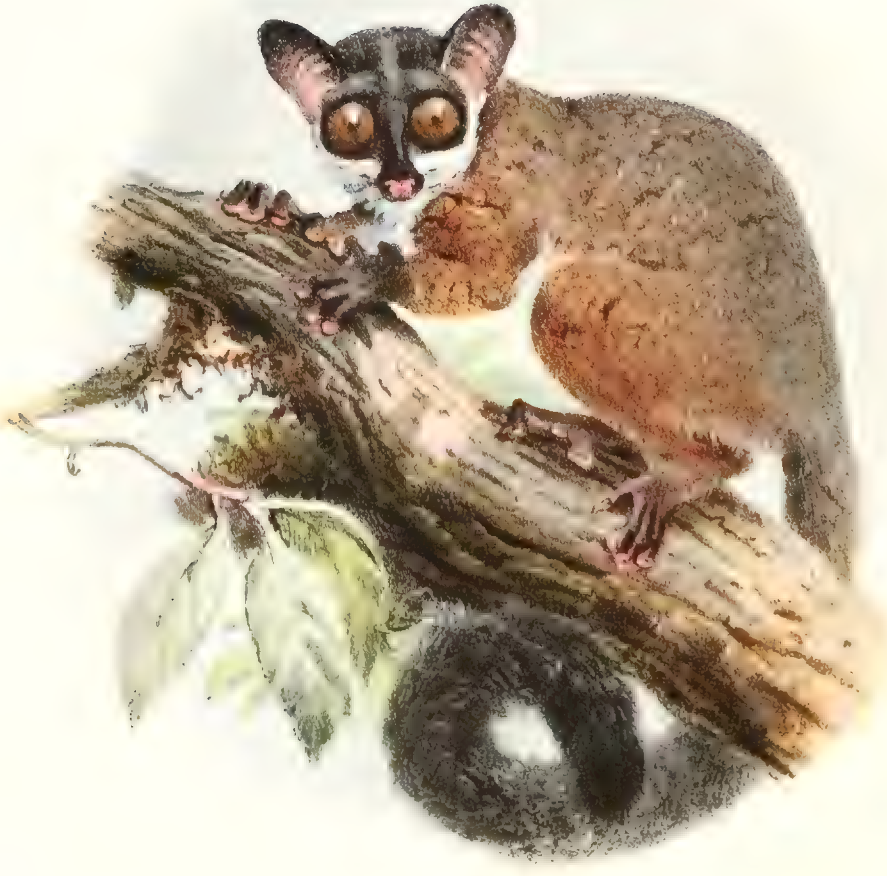
Type locality. Katwi, Athi River, British East Africa. Altitude 3,500 feet. Type in British Museum.

Genl. Char. Size large, but smaller than G. CRASSICAUDATUS or G. GARNETTI. Color pale; ear small; tail, very long.

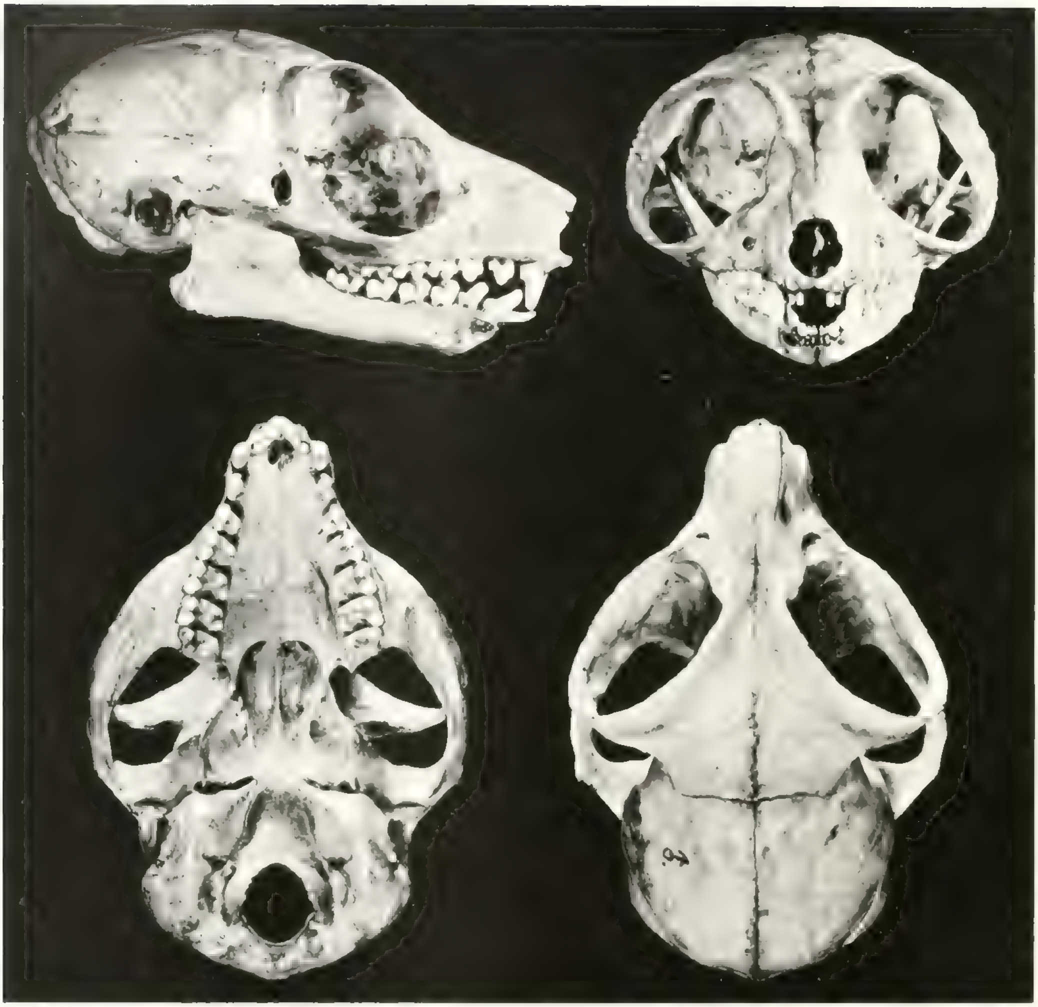
Color. Head and upper parts pale wood brown, washed on head and dorsal region with darker brown; arms and hands like head; outer side of legs isabella color; feet dark brown; chin vinaceous cinnamon; rest of under parts white; tail above pale wood brown, beneath whitish. Ex type British Museum.

Measurements. Total length, about 575; tail, 370; foot, 80; ear, 39. Skull: occipito-nasal length, 63; Hensel, 49; zygomatic width, 42; intertemporal width, 20; palatal length, 23; breadth of braincase, 29; median length of nasals, 19; length of upper molar series, 19; length of mandible, 41; length of lower molar series, 20. Ex type British Museum.

This animal is somewhat smaller than its relatives, G. CRASSICAUDATUS and G. GARNETTI, the skull being very considerably smaller. It also differs in its pale color, and the very long pale almost white tail. It belongs to the group of which G. CRASSICAUDATUS is the representative member. Two specimens are in the British Museum Collection slightly varying in color, the paratype having a darker tail which unfortunately has lost half of its length.



GALAGO ALLENI



GALAGO ALLENI

No. 98.5.4.2. Brit. Mus. Coll. Larger than Nat. Size

GALAGO KIKUYUENSIS Lönnberg.

Galago (*Otolemur*) *kikyuensis* Lönnb., Ann. Mag. Nat. Hist., IX, 8th Ser., 1912, p. 64.

Type locality. Escarpment Station, British East Africa.

Color. "General colour pale greyish brown, somewhat darker on head and upper neck, outside of limbs more chamois; throat and lower side of neck with an ochre-yellow tinge; under side of body dirty white; hands and feet dark brown, inclining to blackish; tail dark brown, gradually darkening to blackish towards the distal third, paler below. Ears naked."

Measurements. "Total length about 62 cm.; tail about equal to head and body. Skull: greatest length, 61; basicranial length, 49; zygomatic breadth, 41; palatal length, 23; length of upper molar series, 19.5."

I have not seen a specimen of this animal, and as Herr Lönnberg makes no reference to any species with which it may be compared, it is difficult to assign it to its proper place in the genus. In size it seems to be nearest to G. HINDSI Elliot, from Katwi, Athi River, British East Africa, and in color appears to differ mainly in the underparts being "dirty white" instead of white, "tail dark brown, gradually darkening to blackish towards the distal third, paler below," instead of tail above pale wood brown, beneath whitish. It may be remarked that the type localities of these two Bush-Babys are not far apart.

Without a careful comparison, it is impossible to state what claims this animal has to a distinct specific rank. As it is impossible to determine this at present, it is here given the benefit of any doubt that may arise.

Subgenus 2. Otolicnus.

Size small; muzzle short; last upper molar may be tricuspidate or quadricuspidate, but the last lower molar is always quinquicuspidate. Angle of mandible produced backwards and slightly downward.

GALAGO ALLENI Waterhouse.

Galago alleni Waterh., Proc. Zool. Soc. Lond., 1837, p. 87; Gray, List Spec. Mamm. Brit. Mus., 1843, p. 16; Dahlb., Stud. Zool. Fam. Anim. Natur., fasc. I, 1856, p. 329; Gray, Proc. Zool. Soc. Lond., 1863, p. 140; Sclat., Proc. Zool. Soc. Lond., 1863, p. 375, pl. XXXII; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 82, fig. 8; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 329; Bedd., Proc. Zool. Soc. Lond., 1891, pp. 453, 461; Forbes, Handb. Primates, I, 1894, p. 43, (Part.); Thos., Proc. Zool. Soc. Lond., 1904, p. 185; Bates, Proc. Zool. Soc. Lond., 1905, p. 71.

Galago acaciarum var. *alleni,* Less., Spec. Mamm., 1840, p. 247.

Galago (*Otolicnus*) *alleni* Schinz, Syn. Mamm., I, 1844, p. 111; Mivart, Proc. Zool. Soc. Lond., 1864, p. 647; Pousarg., Nouv. Archiv. Mus. Hist. Nat. Paris, VI, 1894, p. 150; *Id.* Ann. Mus. Hist. Nat. Paris, III, 7me Sér., 1896, p. 242; F. Major, Proc. Zool. Soc. Lond., 1901, p. 138, fig.

Otolicnus alleni van der Hoev., Tijdsch. Natur. Gesch. Phys., 1844, p. 42; Temm., Esquis. Zool., 1853, p. 40; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 36; V, 1855, p. 159; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wiss. Wien, 1870, p. 742.

Sciurocheirus alleni Gray, Proc. Zool. Soc. Lond., 1872, p. 857.

ALLEN'S GALAGO. *Émam,* native name in Cameroon.

Type locality. Fernando Po. Type in British Museum.

Geogr. Distr. Cameroon, (Sclater); Gaboon and Fernando Po.

Genl. Char. Ears very large; second upper molar nearly equal in size to third premolar, talon greatly developed; last molar quadicuspidate; incisors placed in front of line between canines.

Color. Head, face, back, arms and legs mummy brown; the lower back has the hair much worn and the blackish brown under fur shows, making this part darker than the rest; under parts whitish but most of the hair gone; tail bistre. Ex type British Museum in poor condition.

Another specimen in perfect state has head blackish brown and gray; gray stripe between eyes and on nose; upper parts dark mummy brown; outer side of arms dark cinnamon rufous; patch of cinnamon rufous at thigh joint, rest of leg russet; hands and feet dark grayish brown; under parts grayish white; tail, basal half black, brown and gray, apical half dark chestnut.

Measurements. Total length, 445; tail, 235. Skull: occipito-nasal length, 50; intertemporal width, 19; palatal length, 18; median length of nasals, 13; width of braincase, 24; length of upper molar series, 17; length of mandible, 30; length of lower molar series, 17.

Bates states that the *émam* is "found in the daylight in hollow trees, three or four huddled together asleep. An *émam* that was brought to me alive showed great powers of jumping. A monkey can jump outwards and downwards and catch a branch, but this *Galago* could jump out and up and catch hold of a branch. It died in the hot sunshine when I was away from camp; it had probably never felt sunshine before."

GALAGO ALLENI CAMERONENSIS (Peters).

Otolicnus alleni var. *cameronensis* Peters, Monatsb. K. Preuss. Akad. Wiss. Berlin, 1876, p. 472.

Galago alleni var. *cameronensis* Matschie, Mitt. Geog. Ges. Natur. Mus. Lübeck, 1894, p. 131.

Galago (*Otolicnus*) *alleni* var. *cameronensis* Pousarg., Nouv. Archiv. Mus. Hist. Nat., Paris, VI, 1894, p. 154.

CAMEROON GALAGO.

Type locality. Aqua Town, Cameroon, West Africa. Type in Berlin Museum.

Geogr. Distr. Cameroon, West Africa.

Genl. Char. Tail shorter than typical form, less tufted; posterior upper molar tricuspidate.

Color. Top of head and upper part of body russet brown, hairs white tipped; the fur slate color at base, then russet and tips white; flanks more reddish; indistinct whitish hue between eyes; shoulders, arms above elbows, and outer side of thighs cinnamon, with a reddish tint on shoulders; forearms cinnamon with only a slight red tint; legs below knees, and hinder part of thighs mouse gray, tinged with yellowish on legs; chin, throat, and entire under parts grayish white; hands and feet grayish brown; tail ashy brown the hairs tipped with silvery white; ears brown. Ex type Berlin Museum.

Measurements. Total length, 610; tail, 400. Skull: occipitonasal length, 51; zygomatic width, 32; intertemporal width, 17.5; median length of nasals, 15.5; length of upper molar series, 17; length of mandible, 31; length of lower molar series, 15. Ex type Berlin Museum.

This is a rather smaller animal than G. ALLENI and of a lighter color on body; the tail also is quite different, and much shorter.

GALAGO ALLENI GABONENSIS Gray.

Galago alleni var. *gabonensis* Gray, Proc. Zool. Soc. Lond., 1863, p. 146; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 82.

Galago (*Otolicnus*) *gabonensis* Mivart, Proc. Zool. Soc. Lond., 1864, pp. 339, 647.

Galago (*Otolicnus*) *alleni* var. *gabonensis* Pousarg., Nouv. Archiv. Mus. Hist. Nat. Paris, VI, 1894, p. 152.

Otolicnus gabonensis Gray, Proc. Zool. Soc. Lond., 1872, p. 860.

GABOON GALAGO.

Type locality. Gaboon, West Africa. Type in British Museum.

Geogr. Distr. Gaboon, West Africa. Limits of range unknown.

Genl. Char. Ears smaller than those of G. ALLENI; last upper molar tricuspidate; incisors not in front of canines. Palate narrower. and bullæ larger than in G. ALLENI.

Color. Stripe from forehead on to nose, base of ears, cheeks, and sides of neck light gray; hind neck, and upper parts russet; arms, and upper parts of thighs cinnamon, in some examples these parts are cinnamon rufous; legs from knees to ankles, gray; hands and feet dark grayish brown; under parts, and inner sides of limbs yellowish white; base of tail iron gray, remainder drab gray. Ex type British Museum.

Some specimens have all the upper parts cinnamon rufous, and the tail drab gray; ears brownish black.

Measurements. Total length, 510; tail, 275; foot, 70; ear, 31, (Collector). Skull: occipito-nasal length, 51; Hensel, 39; intertemporal width, 17; palatal length, 18; median length of nasals, 20; breadth of braincase, 24; length of upper molar series, 16; length of mandible, 31; length of lower molar series, 15.

GALAGO ALLENI BATESI Elliot.

Galago alleni batesi Elliot, Ann. Mag. Nat. Hist., XX, 7th Ser., 1907, p. 187.

BATE'S GALAGO.

Type locality. Kemo River, Gaboon, West Africa. Type in British museum.

Gen. Char. Similar to *G. a. gabonensis,* but much darker above, and has a black tail, and light gray feet; and from *G. alleni* it differs in black tail, and gray legs below knees, and feet.

Color. Forehead, base of ears, cheek, stripe between eyes and nose light gray; top of head and hind neck, and upper parts dark mummy brown; outer side of arms dark tawny; a patch of tawny on thigh, the upper portions darker than the lower, rest of legs brownish gray, becoming clear gray on feet; throat, and front of neck yellowish: rest of lower parts whitish; hands grayish mummy brown; tail black sprinkled with gray on basal half. Ears large, blackish. Ex type in British Museum.

Measurements. Skin, total length, 470; tail, 250. Skull: occipito-nasal length, 48; Hensel, 38; zygomatic width, 32; intertemporal width, 18; palatal length, 19; breadth of braincase, 24; median length of nasals, 13; length of upper molar series, 16; length of mandible, 31; length of lower molar series, 14. Ex type British Museum.

While this race has a general resemblance to both G. ALLENI and *G. a. gabonensis,* it can readily be distinguished from both; by its gray legs and feet from G. ALLENI, and gray feet, darker upper parts and black tail from *G. a. gabonensis.* The last named and the present race come together on the Como River, but there are no intermediate specimens.

GALAGO ZANZIBARICUS Matschie.

Galago zanzibaricus Matschie, Sitzungsb. Ges. Naturf. Freunde, Berlin, 1893, p. 111.

ZANZIBAR GALAGO.

Type locality. Island of Zanzibar. Type in Berlin Museum.

Genl. Char. Size small; tail about length of body and head; hair short; fur on body woolly; ears large. Skull with a broad braincase, wide at occiput.

Color. Top of head and upper parts cinnamon, darkest on head and neck and dorsal region; outer side of limbs ochraceous buff; under parts buff; hands and feet grayish white; tail, Prout's brown, hairs tipped with golden, becoming blackish brown at tip. Ex type Berlin Museum.

Measurements. Total length, 365; tail, 195. Skull: total length, 42; occipito-nasal length, 42; zygomatic width, 27; intertemporal width, 16; median length of nasals, 11; length of upper molar series, 12; length of mandible, 23.5; length of lower molar series, 11. Ex type Berlin Museum.

The type is a flat skin in fair condition. It is a very small animal about the size of G. CAMERONENSIS, but with a shorter and less bushy tail.

GALAGO TALBOTI Dollman.

Galago talboti Dollman, Ann. Mag. Nat. Hist., V, 8th Ser., 1910, p. 93.

Type locality. Nkami, Southern Nigeria. Type in British Museum.

Genl. Char. Similar to G. ELEGANTULUS, but under parts buffy white, instead of gray.

Color. Upper parts pale brownish red; dorsal stripe brownish orange, hairs slaty gray on basal half, then yellowish and apical portion buffy brown. Face and sides of head reddish buff; top of head grayish buff and red; sides of neck grayish white; under parts buffy white; flanks reddish brown; throat reddish, hairs gray at their bases; outer side of arms grayish red, of legs like back but more yellow; inner side of limbs buffy white; hands and feet yellowish white; tail above brownish buff washed with gray, tip grayish buff.

Measurements. Total length, 440; tail, 274; foot, 64; ear, 31. Skull: total length, 49.4; zygomatic width, 35.7; basal length, 37.5; greatest length of nasals, 13.4; palatal length, 18.5; length of upper molar series, 14.

This species is unknown to me.

GALAGO GALLARUM Thomas.

Galago gallarum Thos., Ann. Mag. Nat. Hist., VIII, 7th Ser., 1901, p. 27.

Galago galago Thos., Proc. Zool. Soc. Lond., 1900, p. 802.

BORAN GALAGO.

Type locality. Webi Daue, Boran Galla country, East Africa. Type in British Museum.

Geogr. Distr. Boran Galla country, East Africa.

Genl. Char. Drab coloration; yellow limbs; dorsal hairs with white subterminal bands.

Color. General color above écru drab; the hairs being dark slaty gray on basal half, then fulvous followed by a white subterminal, and black terminal, rings. Centre of nose, white; orbital ring, black; outer side of legs pale ochre yellow; arms écru drab; hands and feet yellowish white; chin, inner side of arms, and inguinal region white to the base of hairs; belly hairs white, their bases slaty; tail pale smoky gray, tip black. Ex type British Museum.

Measurements. Total length, 390; tail, 225; ear, 34. No skull.

GALAGO BRACCATUS Elliot.

Galago braccatus Elliot, Ann. Mag. Nat. Hist., XX, 7th Ser., 1907, p. 187.

MT. KILIMANJARO GALAGO.

Type locality. Mount Kilimanjaro, German East Africa. Type in British Museum.

Genl. Char. Similar to G. GALLARUM, but darker gray above, and the bright buff of the limbs ends abruptly on meeting the gray color, and does not grade into it, as in the allied species.

Color. Head and neck buff, hairs tipped with black, giving these parts a grizzled appearance; rest of upper parts iron gray; orbital ring black; stripe between eyes, nose, upper lip, cheek and chin, gray; upper side of arms and legs, bright buff; hands and feet, yellowish gray; under parts, and inner side of thighs, yellowish white; tail, Prout's brown, hairs tipped with white; ear large, naked, black. Ex type British Museum.

Measurements. Total length about 480; tail, 300. Skull: occipito-nasal length, 45; Hensel, 32; zygomatic width, 29; intertemporal width, 19; palatal length, 15; width of braincase, 24; median length of nasals, 12; length of upper molar series, 13; length of mandible, 26; length of lower molar series, 13. Ex type British Museum.

This rather handsome species was obtained by Mr. A. B. Percival on Mount Kilimanjaro, East Africa. While allied to G. GALLARUM Thomas, it is easily distinguished from the type of that species by its dark gray color, and the abruptness with which the buff and gray of the legs come together. As is to be expected of an animal living upon a high mountain the fur is thick and long. There are no appreciable differences in the skulls of the two species.

GALAGO BRACCATUS ALBIPES Dollman.

Galago braccatus albipes Dollman, Ann. Mag. Nat. Hist., 8th Ser., IV, 1909, p. 549.

Type locality. Kirui, Elgon, British East Africa. Altitude 6,000 feet. Type in British Museum.

Genl. Char. Similar to G. BRACCATUS, but back darker, limbs lighter.

Color. General hue dark ashy gray; outer side of arms similar to G. BRACCATUS, but paler and more yellow toward extremities; outer side of upper thighs dark gray, remainder, and legs pale yellowish buff; fingers and toes white; throat and chest buff colored; inner side of limbs grayish buff. Tail not mentioned.

Measurements. Total length, 445; tail, 270; foot, 65; ear, 41. Skull: total length, 46; Hensel, 32; zygomatic breadth, 33.5; palatal length, 14; length of upper molar series, 13.

I have not seen this race as it was received at the British Museum and described after my departure from England.

GALAGO DUNNI Dollman.

Galago dunni Dollman, Ann. Mag. Nat. Hist., 8th Ser., V, 1910, p. 92.

Type locality. Fafan, 35 miles east of Harrar, Somaliland, East Africa.

Genl. Char. Similar to *G. braccatus albipes,* but larger and paler. Skull: nasals broad anteriorly, then narrowing and widening posteriorly.

Color. Upper part of body pale grayish brown, darker on dorsal line, hairs being slaty gray with grayish white tips; flanks paler; outer side of arms buff; outer side of legs like *G. b. albipes,* but more buffy and the gray parts paler; under parts and inner side of arms white washed with cream; inner side of legs grayish white tinged with yellow; hands and feet yellowish; tail above basal half like back, apical half browner; beneath paler, more gray.

Measurements. Total length, 475; tail, 275; foot, 72; ear, 38. Skull: total length, 48; zygomatic width, 34.5; nasals greatest length, 14; greatest width, 4.9; least width, 2.4; palatal length, 14.7; length of upper molar series, 13.3.

This species I have not seen.

GALAGO NYASSÆ Elliot.

Galago nyassæ Elliot, Ann. Mag. Nat. Hist., XX, 7th Ser., 1907, p. 188.

Galago moholi Thos., (nec Smith), Proc. Zool. Soc. Lond., 1894, p. 137.

Type locality. Mountains south of Lake Nyassa, Portuguese East Africa. Type in British Museum.

Genl. Char. Fur woolly; tail bushy; skull, much broken, exhibits great differences from that of the species I call G. SENNAARIENSIS from the White Nile southward to Ankole, west of the Victoria Nyanza. The rostrum is long and more slender, and the nasals are long and narrow; the palate is long and narrow and does not widen out posteriorly to anything like the extent as seen in skulls of G. SENNAARIENSIS; the anterior line of the orbit is in front of the first molar, instead of in front of the third premolar as in the other species; there is only a slight rise of the frontal above the rostrum, thus making the superior outline of the skull very much less rounded, indeed quite flat as compared with that of G. SENNAARIENSIS. Of the braincase only the frontals and parietals remain, the occipital region and bullæ, and lower portion of skull on one side even to the palate, having disappeared, so no comparison can be made beyond those already given.

Color. General hue above broccoli brown; outer side of arms broccoli brown; legs cream buff; under parts and inner side of limbs yellowish white; cream buff on chest. Ex type in British Museum.

Measurements. Total length about 355 to end of hairs on tail; tail, 185. Skull: from frontal suture to end of nasals, 27; median length of nasals, 10; width of rostrum at canines, 7; length of palate, 15; width between last molars, 7; length of lower molar series, 13. Ex type in British Museum.

The type in the British Museum Collection of skins and an example in alcohol from Zomba, Nyassa, are all that are known of this species. While the skin resembles in color G. GALLARUM more perhaps than any other, the skull in its long and narrow rostral region, and low crown is very different. The type was procured by Dr. Kirk when he was accompanying Dr. Livingstone, the famous Explorer.

GALAGO GRANTI Thomas and Wroughton.

Galago granti Thos. and Wrought., Proc. Zool. Soc. Lond., 1907, p. 286; 1908, p. 166.

Type locality. Cogungo, Inhambane District, near Delagoa Bay, Portuguese East Africa. Type in British Museum.

Genl. Char. Muzzle long; tail long, bushy.

GRANT'S GALAGO. Native name in Portuguese East Africa, *Konsiti, Suwanjati,* (Inhambane).

Color. Entire upper parts, wood brown, darkest on middle of back; nose and stripe between eyes, broadening to a patch on forehead, whitish gray; sides of nose and lips, and orbital ring, black; top of head blackish, caused by the dark tips of hairs massed over the wood brown central portions; cheeks buffy; outer side of arms clay color; outer side of legs cream buff; throat and chest cream buff; rest of under parts whitish; hands grayish, feet cream buff; tail cinnamon, blackish at tip; ears black. Ex type British Museum.

Measurements. Total length, 395; tail, 237; foot, 63; ear, 43, (Collector). Skull: occipito-nasal length, 44; Hensel, 32; zygomatic width, 28; intertemporal width, 27; palatal length, 15; width of braincase, 22; median length of nasals, 10; length of upper molar series, 13; length of mandible, 26; length of lower molar series, 13. Ex type British Museum.

This is a pale species with a long bushy tail, and belongs to the small forms of the GALAGO SENEGALENSIS group, and does not approach very nearly in color to any of the other species. Mr. Grant, as quoted by Messrs. Thomas and Wroughton, states that at Cogungo, Inhambane, it was "common and inhabited the forests. It is strictly nocturnal, sleeping during the day in hollow trees, where it may generally be taken in small family parties. This species like many others is eaten by the natives."

GALAGO SENEGALENSIS E. Geoffroy.

Galago senegalensis E. Geoff., Mag. Encyclop., 1796, p. 41, pl. I; Fisch., Anat. Maki, 1804, p. 42; *Id.* Syn. Mamm., 1829, p. 68; E. Geoffroy, Ann. Mus. Hist. Paris, XIX, 1812, p. 166; *Id.* Cours Hist. Nat. Mamm., 1828, p. 33, 11me Leçon; Gray, List Spec. Mamm. Brit. Mus., 1843, p. 17; I. Geoff., Cat. Primates, 1851, p. 81; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., 1856, fasc. I, pp. 228-230; Gray, Proc. Zool. Soc. Lond., 1863, p. 147; Mivart, Proc. Zool. Soc. Lond., 1864, p. 147; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 10; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 329, (Part.); Anders., Cat. Mamm., Ind. Mus. Calc., Pt. I, 1881, p. 98; Forbes, Handb. Primates, I, 1904, p. 41.

Lemur galago Shaw, Genl. Zool., I, 1800, p. 108.

Galago geoffroyi Fisch., Mém. Soc. Imp. Nat. Moscou, I, 1806, p. 25.

Galagoides senegalensis. A. Smith, S. Afr. Quart. Jour., II, 1833, p. 32.

Galago acaciarum Less., Spec. Mamm., 1840, p. 246.

Galago moholi A. Smith, Ill. Zool. S. Afr., 1839, pl. LXXXVIII bis; Gray, Proc. Zool. Soc. Lond., 1863, p. 146; Huxley, Proc. Zool. Soc. Lond., 1864, p. 324, fig. 5; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wissensch. Wien, 1870, p. 739; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 83, fig. 9; *Id.* Proc. Zool. Soc. Lond., 1872, p. 859; Pousarg., Nouv. Archiv. Mus. Hist. Nat. Paris, VI, 1894, p. 146.

Otolicnus galago Wagn., Schreb., Säugth. Suppl., I, 1840, p. 292; V, 1855, p. 158; van der Hoev., Tijdsch. Natur. Geschied., 1844, p. 40.

Galago acaciarum var. B. SENEGALENSIS Less., Spec. Mamm., 1840, p. 248.

Otolicnus senegalensis Wagn., Schreb., Säugth. Suppl., I, 1840, p. 292, tab. XXXVIIIb; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wissench. Wien, 1870, p. 731; Gray, Proc. Zool. Soc. Lond., 1872, p. 859; Pousarg., Archiv. Mus. Hist. Nat., Paris, 1904, p. 144.

Galago conspicillatus I. Geoff., Cat. Primates, 1851, p. 81; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., 1856, fasc. I, pp. 228-230; Gray, Proc. Zool. Soc. Lond., 1863, p. 148; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wissench. Wien, 1873, p. 741.

Otolicnus galago B. *senegalensis* Wagn., Schreb., Säugth. Suppl., V, 1855, p. 158.

Otolicnus galago var. *australis* Wagn., Schreb., Säugth. Suppl., V, 1855, p. 158.

Galago murinus Murray, Edinb. Phil. Jour., X, 1859, p. 243, juv.

Galago (*Otolicnus*) *senegalensis* Schinz, Syn. Mamm., 1844, p. 111; Mivart, Proc. Zool. Soc. Lond., 1864, p. 647.

Galago (*Otolicnus*) *moholi* Schinz, Syn. Mamm., I, 1844, p. 111; Mivart, Proc. Zool. Soc. Lond., 1864, p. 647.

Otolicnus cuvieri Fitzing., Sitzungsb. Metth. Naturw. Akad. Wissench. Wien, 1870, p. 745.

SENEGAL GALAGO.

Type locality. Senegal, West Africa. Type in Paris Museum.

Geogr. Distr. Senegal, Angola, (Cameron).

Genl. Char. Ears large, bare; legs longer than arms; posterior upper premolar smaller than the middle and posterior molars; posterior premolar and first and second molars have a small cusp between the two front cusps; upper incisors four.

Color. Head, Prout's brown, the hairs tipped with gray; upper parts dark gray washed with russet; outer side of legs cream buff; under parts yellowish white; hands brown, feet blackish; tail, basal portion similar to back, remainder burnt umber; a white streak between eyes and nose; ears pale brown.

The type in the Paris Museum has top of head Prout's brown, shading into yellowish gray on the back of neck; rest of upper parts pinkish buff, becoming more cream buff on outer side of limbs; under parts, and inner side of limbs pale yellow; tail pale sooty brown; hands and feet brownish yellow; ears yellow. The type has faded, and exhibits at present a cream buff animal with a pinkish tinge on the upper parts, and with a brown head and pale sooty brown tail. The ears are very large, and yellow in their dried state. The orbits are the same in color as the rest of the face, but other examples have black orbital rings. This style was named *conspicillatus* by Geoffroy. *G. moholi* Smith, is the same as the present species and the name must become a synonym. The type is in the British Museum Collection and is in a faded condition. My description taken from it reads as follows. Head and upper parts of body, écru drab; outer side of limbs cream buff; under parts yellowish white; hands and feet yellowish gray; tail above fawn color on basal half, Prout's brown on the remaining portion, growing darker at tip.

Measurements. Total length, 400; tail, 230. Skull, not the type: occipital region gone; intertemporal width, 18; palatal length, 12; width of braincase, 23; median length of nasals, 11; length of upper molar series, 12; length of mandible, 22; length of lower molar series, 12.

The skull of the type is in the skin.

GALAGO SENNAARIENSIS Lesson.

Galago acaciarum var. G. *sennaariensis* Less., Spec. Mamm., 1840, p. 248.

Otolicnus teng Sundev., Konegl. Sven. Vatenk. Akad. Handl., 1842, p. 201.

Otolicnus galago a. sennaariensis Wagn., Schreb., Säugth. Suppl., 1855, p. 158.

Galago sennaariensis Gray, Proc. Zool. Soc. Lond., 1863, p. 147; Mivart, Proc. Zool. Soc. Lond., 1864, pp. 137-630; Huxley, Proc. Zool. Soc. Lond., 1864, p. 324.

Galago (Otolicnus) sennaariensis Mivart, Proc. Zool. Soc. Lond., 1864, p. 647.

Otolicnus sennaariensis Gray, Proc. Zool. Soc. Lond., 1872, p. 859.

Galago moholi (nec Smith), Kirk, Proc. Zool. Soc. Lond., 1864, p. 650; Thomas, Proc. Zool. Soc. Lond., 1894, p. 137; 1896, p. 790. (Nyassaland).

Type locality. Sennaar, Africa.

Geogr. Distr. Sennaar along the White Nile south of Khartoum, to Mashonaland, and into Ankole west of the Victoria Nyanza, up to 5,000 feet. Nyassaland at Kebrabassa, Batoka (Kirk), and the Chiradzula Mts. (Thomas).

Genl. Char. General hue dark bluish gray; tail very long, half as long again as the body; feet large; ears large. Posterior upper molar tricuspidate; third upper premolar very large.

Color. Head, neck, rest of upper parts and outer side of limbs dark bluish gray, washed sometimes on head and back with brown; (one specimen from Goz Abu Guma on the White Nile, is pale gray washed with écru drab on the back); orbital ring black; stripe between eyes and on nose white; inner edge of thighs cream buff; entire under parts whitish; hands gray; feet whitish gray; tail at base écru drab, remainder blackish, hairs tipped with white; ears black.

Measurements. Total length, 483; tail, 303; foot, 75; ear, 43. Skull: occipito-nasal length, 45; Hensel, 13; zygomatic width, 32; intertemporal width, 18; palatal length, 19; width of braincase, 25; median length of nasals, 13; length of upper molar series, 13; length of mandible, 28; length of lower molar series, 13.

This appears to be a well marked, long tailed, blue gray species found in the valley of the White Nile, southward to the west of the Victoria Nyanza, and to Mashonaland up to an elevation of 5,000 feet. Eight specimens are in the British Museum Collection; from Goz Abu Guma on the White Nile north of Khartoum, Mashonaland at Mazæ 5,000 feet elevation, and South Western Ankole, west of the Victoria Nyanza at an altitude of 5,000 feet. It seems impossible to discover any differences to separate these specimens. The skins with one exception closely resemble each other; the exception being the one from Goz Abu Guma, which is an écru drab above, but others from the same locality are the usual blue gray, and for lack of any evidence to the contrary, we must attribute this difference to an individual peculiarity, or to season, as it was taken in April, the blue ones in November. More material and more knowledge of the seasonal changes, are necessary before the value of many specific differences, so considered, can be fully ascertained. The skulls vary considerably in size, but this difference is probably caused by age or sex. In the Paris Museum is a specimen, No. 187, which is recorded in the old Catalogue as GALAGO SENNAARIENSIS TYPE. This is probably the specimen called by Lesson (l. c.) *Galago acaciarum* var. C. *sennaariensis.* It is the usual blue gray animal, the specimen faded somewhat in the lapse of years, the blue hue only remaining on top of head and upper back between the shoulders, rest of upper parts and limbs assuming a brownish tint. The tail is darker than the body and is now a reddish brown hue. The ears are large and blackish, the under parts and inner side of limbs whitish, and the skull is in the skin.

Measurements. Total length, 365; tail, 195; foot, 65.

In the British Museum are two specimens of this species each marked co-type and which were the originals of Gray's description. He did not select any particular specimen as *The* type.

GALAGO MOSSAMBICUS Peters.

Galago senegalensis Peters, Reis. Mossamb. Säugeth., 1852, p. 11. (nec Geoff.).

Galago mossambicus Peters, Sitzungsb. Ges. Naturf. Freunde, Berlin, 1876, p. 143; Thos. and Wrought., Proc. Zool. Soc. Lond., 1908, p. 537.

MOZAMBIQUE GALAGO.

Type locality. North of Tete, Mozambique. Type in Berlin Museum.

Geogr. Distr. Type locality only.

Genl. Char. Size small; tail very long; ears large; rostrum very short.

Color. General color of head, upper parts of body and outer side of limbs sooty gray, tinged with buff on hinder part of thighs and legs below the knee; under parts and inner side of limbs sooty buff; hands and feet sooty; tail sooty brown tinged with reddish. Ex type Berlin Museum.

Measurements. Total length, 400; tail, 210. Skull, much broken: zygomatic width, 26; median length of nasals, 10; length of upper molar series, 9. Ex type Berlin Museum.

This is a small animal distinguished by its sooty head. That is, as the type is today, as shown to me in the Berlin Museum; but Peters in his Reise states, that the under parts are grayish white, (*grau weiss*), or yellowish white, (*gelblich weiss*). Four specimens in the British Museum from a few miles south of Tete have the under side so colored. It is probable therefore that the type has become discolored by dust, and does not correctly represent the species.

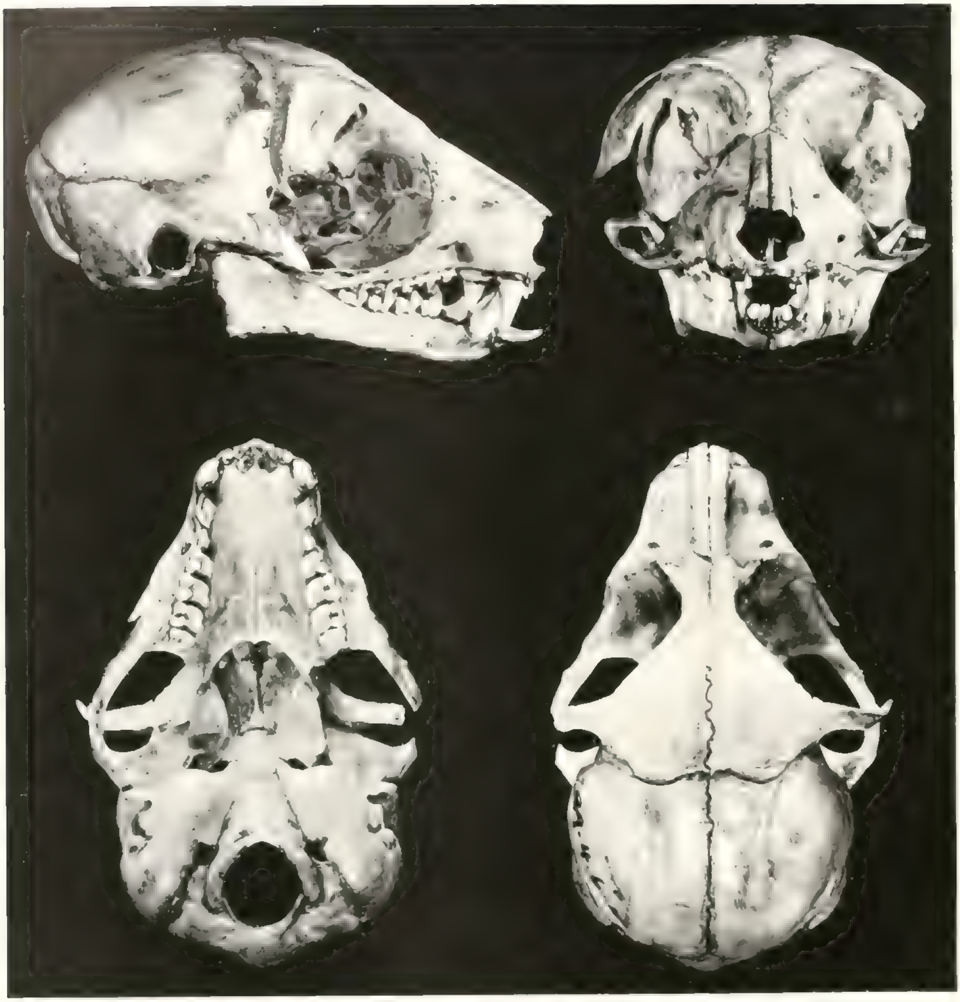
GALAGO PUPULUS Elliot.

Galago pupulus Elliot, Ann. Mag. Nat. Hist., IV, 8th Ser., 1909, p. 77.

Type locality. Yola, Nigeria. Type in British Museum.

Genl. Char. Size small, color pale; ears very large; tail very long.

Color. Top of head, neck, and back to root of tail brownish gray, the brown tinge less noticeable between the shoulders which part is a



GALAGO ELEGANTULUS

No. 99.4.6.4. Brit. Mus. Coll. [illegible] Larger than Nat. Size more decided gray; nose, and between eyes whitish; sides of head, chin, throat, under side of body, and inner side of thighs grayish white; forearms and legs cream buff; inner side of arms buffy white; hands and feet cream buff; tail drab gray; ear reddish brown. Ex type British Museum.

Measurements. Total length, 360; tail, 220; foot, 37. Skull: total length, 40.2; intertemporal width, 28.6; breadth of braincase, 22.4; Hensel, 26.2; zygomatic width, 25; median length of nasals, 12.8; palatal length, 12.5; length of upper molar series, 13; length of mandible, 22; length of lower molar series, 11.5. Ex type British Museum.

This species belongs to the group having the hind legs more or less cream buff in color. The ears are enormous occupying the entire sides of the head, and the pale yellowish hue of the outer side of the limbs is very conspicuous. In general appearance it is very like G. MOSSAMBICUS, but the characters of the skull are very different. The species just named is remarkable for its very short rostrum while the present animal has a long rostrum, with slender nasals, of about equal width for their entire length, while those of its relative broaden considerably at the tip; the bullæ are much longer and narrower and the molar series much larger.

Subgenus 3. Otogale.

First upper premolar shaped like canine; muzzle short; angle of mandible produced downwards; tarsus shorter in proportion to tibia than in members of subgenus *Otolicnus*.

GALAGO ELEGANTULUS Le Conte.

Galago elegantulus Le Conte, Proc. Acad. Nat. Scien. Phil., 1857, p. 10; Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 153; Pousarg., Ann. Scien. Nat., Paris, III, 7me Sér., 1896, p. 241; Thos., Proc. Zool. Soc. Lond., 1901, p. 185.

Galago (*Otogale*) *elegantulus* Mivart, Proc. Zool. Soc. Lond., 1864, p. 647.

Galago alleni Forbes, Handb. Primates, I, 1894, p. 43, (Part.).

Galago (*Otolicnus*) *elegantulus* Mivart, Proc. Zool. Soc. Lond., 1901, p. 138; Pousarg., Nouv. Archiv. Mus. Hist. Nat. Paris, VI, 1894, p. 141.

Type locality. West Africa. Type in the Academy of Natural Sciences of Philadelphia.

Geogr. Distr. Cameroon, West Africa.

Genl. Char. Ears short; tail very long with white spot at tip; first upper premolar canine like; no lachrymo-malar suture, the malar placed further backward than in other species.

Color. Upper parts pale cinnamon rufous, paler on the rump; dark cinnamon rufous dorsal band from head to lower back, indistinct upon the neck; forehead gray washed with cinnamon; orbital rings black; line from forehead over nose gray; outer side of arms dull russet; outer side of legs wood brown; entire under parts of body, and inner side of limbs slate color washed with yellowish white, the hairs being tipped with that hue; hands and feet broccoli brown; ears dark mars brown; tail at base above like the back, remainder drab, sometimes grayish with a white tip, beneath slate color washed with white. Ex type Philadelphia Academy of Natural Sciences.

Measurements. Total length, about 580; tail, 260. Skull: (not the type), occipito-nasal length, 44; Hensel, 34; zygomatic width, 35; intertemporal width, 20; palatal length, 15; median length of nasals, 11; length of upper molar series, 13; length of mandible, 30; length of lower molar series, 14.

This form is distinguishable from others of the genus by the bright rufous upper parts, and by the yellowish brown tail, sometimes grayish and tipped with white. The color of the upper parts is quite different from that exhibited by the other members of the genus. The type is still of a very bright cinnamon rufous on back. No skull for the type specimen.

GALAGO ELEGANTULUS TONSOR Dollman.

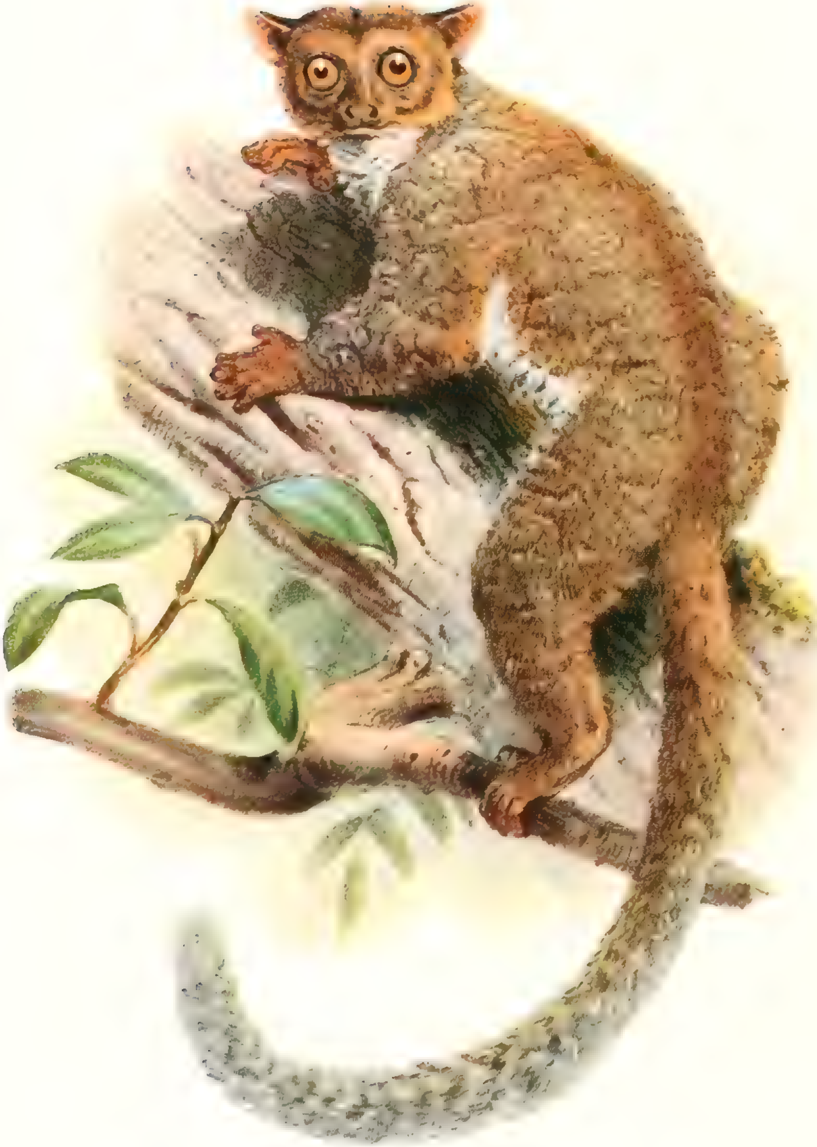
Galago elegantulus tonsor Dollman, Ann. Mag. Nat. Hist., V, 8th Ser., 1910, p. 94.

Type locality. 15 miles from mouth of Benito River, Spanish Guinea, West Africa.

Genl. Char. Similar to G. ELEGANTULUS but paler; skull smaller.

Geogr. Distr. Benito River, Spanish Guinea, and Efulan, Cameroon, West Africa.

Color. General color pale orange, dorsal line brighter; face and sides of head gray; top of head gray washed with pale buff; under parts, and inner side of limbs grayish white; outer side of arms gray and buff; of legs yellowish gray; hands and feet gray; tail on basal



GALAGO ELEGANTULUS PALLIDUS

half above grayish buff, remainder gray with white tip, beneath gray washed with buff at base.

Measurements. Total length, 495; tail, 280; foot, 61; ear, 30. Skull: total length, 45.4; zygomatic width, 36; basal length, 35; length of nasals, 11.6; palatal length, 17.3; length of molar series, 13.

I have not seen this race.

GALAGO ELEGANTULUS PALLIDUS Gray.

Otogale pallida Gray, Proc. Zool. Soc. Lond., 1863, p. 140, t. XIX; Huxley, Proc. Zool. Soc. Lond., 1864, p. 324; Mivart, Proc. Zool. Soc. Lond., 1864, p. 646; Matschie, Säugeth., Deutsch. Ost Afr., 1895, p. 14.

Otolicnus pallidus Pousarg., Nouv. Archiv. Mus. Hist. Nat., Paris. VI, 1894, p. 141.

Galago (*Otogale*) *pallidus* Mivart, Proc. Zool. Soc. Lond., 1864, p. 646.

Euoticus pallidus Gray, Proc. Zool. Soc. Lond., 1872, p. 860.

Galago pallida Bates, Proc. Zool. Soc. Lond., 1905, p. 71.

PALE GALAGO. Nsæ, native name in Southern Cameroon.

Type locality. Fernando Po. Type in British Museum.

Geogr. Distr. Southern Cameroon, (Bates), and Island of Fernando Po, (Capt. Burton), West Africa.

Genl. Char. Head short, broad; face short, conical; eyes large; last upper molar quadricuspidate; last lower molar quinquicuspidate.

Color. Head, and between shoulders, and outer side of arms dark hair brown, rest of back broccoli brown; gray spot between eyes; nose blackish; white spots at axillæ, and another on each side opposite the groin; dorsal line from middle of back to tail, mummy brown; outer side of legs like lower back; tail like back for basal third, remainder smoky gray. Ex type British Museum.

Another specimen is paler, being dark hair brown washed with wood brown on head, upper part of back and arms; remaining upper parts, and legs wood brown; under parts yellowish; basal part of tail wood brown, remainder hair brown washed with gray. British Museum specimen.

Measurements. Size similar to G. ELEGANTULUS. Skull: zygomatic width, 48; intertemporal width, 29; palatal length, 18; breadth of braincase, 25; median length of nasals, 13; length of upper molar series, 14; mandible missing, and occipital region of skull gone.

This race is much darker than G. ELEGANTULUS and has none of the cinnamon color of that species; the mummy brown on the dorsal line, which is quite indistinct, being the only change from the general uniform hair brown color of the upper parts of the body. There are only two examples in the British Museum Collection, the second one being lighter on back and rump, this apparently on account of the old hair not having been yet shed, as the head and upper part of the back are dark like the type.

Bates records (l. c.) that the *Nsæ* uses neither hollow trees nor old squirrel's nests for a hiding place in the daytime. They are found sleeping in bunches of as many as a half dozen, clinging with their arms around each other's bodies and around the branch of a tree. A shrill squeaking or chirping often heard at night among the tree tops of the forest, is referred by the natives to the *Nsæ*. They say that this noise is heard oftener near morning and that then the father is calling together the rest of the company, to gather them into a huddle for the daytime.

GALAGO ELEGANTULUS APICALIS (Du Chaillu).

Otolicnus apicalis Du Chaillu, Proc. Bost. Soc. Nat. Hist., 1860, p. 361; *Id.* Equat. Africa, Append. 1861, p. 471; Matschie, Mitt. Geog. Ges. Nat. Mus. Lübeck, 1894, p. 131.

DU CHAILLU'S GALAGO. *Aboli,* native name.

Type locality. Equatorial Africa. "Mountains of the interior near the equator." No particular locality given. Type in British Museum.

Genl. Char. Skull of type has only the frontal bone, orbits and rostrum remaining; but these portions show considerable differences from the skull of G. ELEGANTULUS with which species this one has been united by some writers. These differences may be expressed as follows. The width between the orbits is much greater; the nasals are narrower, and the rostrum anteriorly much more slender and narrower; the frontal from the parietal suture to nasals is shorter; the posterior end of nasals is rounded instead of pointed; first upper molar is smaller and the third larger; the bony palate from the center of the arch is longer, and the width throughout its length much less, causing the teeth to lie more on a straight line and not to flare outward, as is the case with the tooth rows of G. ELEGANTULUS; the bony ring of the orbits is much wider.

Color. Head, neck, and upper parts bright russet; dorsal streak burnt umber; outer side of arms mummy brown; outer side of legs

Prout's brown; under parts of body, and inner side of limbs yellowish white, the tips of the hairs being that color; hands like arms; feet like legs; tail at base mars brown, remainder bistre with whitish tips. Ex type British Museum.

Measurements. About the size of G. ELEGANTULUS. Skull: length of frontal, 19; width between orbits, 5; length of nasals, 12; width of rostrum above canines, 10; palatal length, 18; width of palate between last molars, 14; length of tooth row, 13. Ex type British Museum.

The type, from which the above description and measurements were taken, is a very much darker and altogether a differently colored animal than G. ELEGANTULUS, and can be recognized at a glance. The differences in color and in the dimensions of the skull above given would seem to almost entitle this form to a separate specific rank.

Du Chaillu states (l. c.) this species is called *Aboli* by the natives. It lives in the forest retiring by day to holes in the trees, coming out at night in search of food, which consists of fruit and insects. The male and female generally dwell together. "I kept one for some time and it throve well, being very fond of cockroaches, bananas and corn." It is found in the mountains of the interior near the equator.

GENUS 4. HEMIGALAGO. BUSH BABYS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1\ \ 1}{1-1}; \quad \text{P. } \frac{3-3}{3-3}; \quad \text{M. } \frac{3-3}{3-3} = 36.$$

First upper premolar unlike canine; premaxillæ extending in front of incisors; muzzle short; angle of mandible produced downwards and backwards; tarsi very long; species small in size. Second upper premolar with cusp on the heel.

KEY TO THE SPECIES AND SUBSPECIES.

A. Second upper premolar with cusp on heel.
  a. Upper parts Prout's brown ....*H. demidoffi.*
  b. Upper parts mars brown ....*H. d. poensis.*
  c. Upper parts rufous washed with yellow.......*H. anomurus.*
  d. Upper parts drab washed with mars brown.....*H. thomasi.*

*HEMIGALAGO DEMIDOFFI (Fischer).

Galago demidoffi Fisch., Mém. Soc. Imp. Nat. Moscou, I, 1806, p. 1, pl. XXIV, fig. 1, Juv.; *Id.* Syn. Mamm., 1829, p. 68; I. Geoff., Cat. Primates, 1851, p. 81; Gray, Proc. Zool. Soc. Lond., 1863, p. 148; Peters, Proc. Zool. Soc. Lond., 1863, p. 380, pl. XXV; Gray, Proc. Zool. Soc. Lond., 1865, p. 248, fig.; Thos., Proc. Zool. Soc. Lond., 1888, p. 5, (Mombuttu); Forbes, Handb. Primates, I, 1894, p. 44; Pousarg., Ann. Scien. Nat., Paris, III, 7me Sér., 1896, p. 242.

Mioxicebus rufus Less., Spec. Mamm., 1840, p. 219.

Microcebus rufus Schinz, Syn. Mamm., I, 1844, p. 107.

Otolicnus peli Temm., Esquis. Zool., 1853, p. 42; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wissensch. Wien, 1870, p. 746.

Otolicnus demidoffi Wagn., Schreb., Säugth. Suppl., I, 1840, p. 292, (footnote); V, 1855, p. 165; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wissensch. Wien, 1870, p. 748.

Hemigalago demidoffi Dahlb., Stud. Zool. Fam. Reg. Anim.

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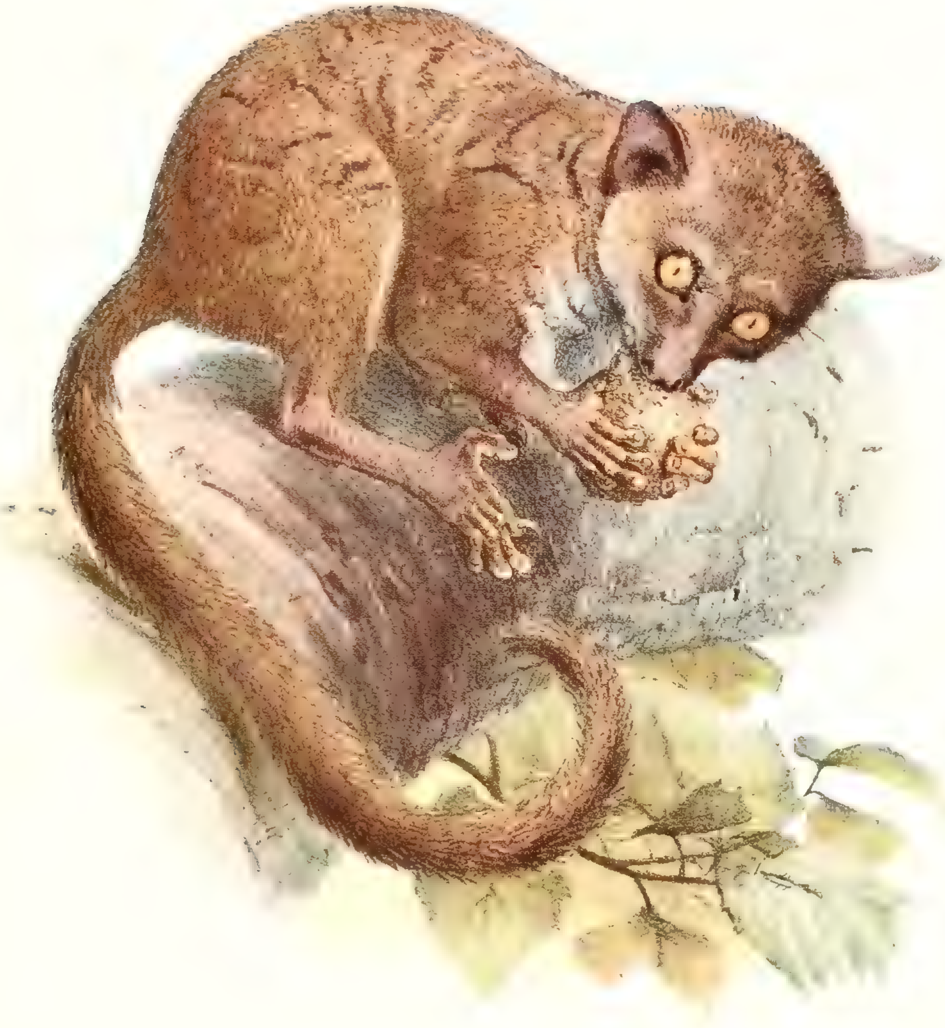
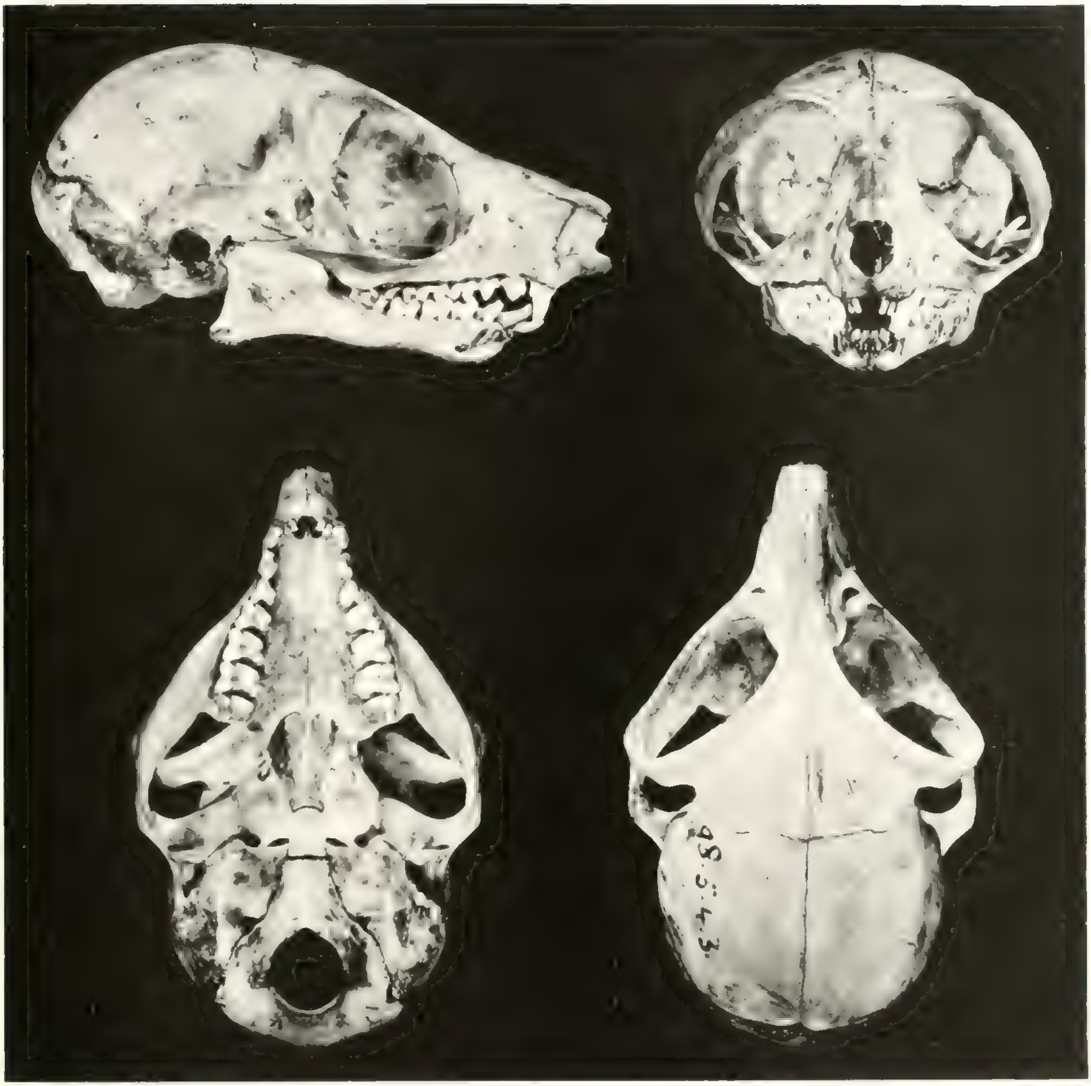
*For Geographical Distribution see Galago, p. 52.



HEMIGALAGO DEMIDOFFI



HEMIGALAGO DEMIDOFFI.

No. 98.5.4.3. Brit. Mus. Coll. Twice Nat. Size.

Natur., 1856, fasc. I, p. 230, tab. X, figs. 35, 35a; Gray, Proc. Zool. Soc. Lond., 1872, p. 858; F. Major, Proc. Zool. Soc. Lond., 1901, p. 139, figs. 38, 39.

Galago (*Hemigalago*) *demidoffi* Mivart, Proc. Zool. Soc. Lond., 1864, p. 648.

Galago pusillus Peters, Monatsb., Königl. Preuss. Akad. Wiss. Berlin, 1876, p. 473.

DEMIDOFF'S GALAGO. *Ojam,* native name.

Type locality. Senegal.

Geogr. Distr. Gold Coast to Great Basin of the Congo, West and Central Africa; Mombuttu, Equatorial Africa, (Thomas); Dongila, Gaboon, (Peters).

Genl. Char. Second upper premolar with two small cusps on heel; upper molars with small cusp on oblique ridge; tail longer than head and body.

Color. Head and upper parts Prout's brown, darkest on center of back and rump, but sometimes these parts are cinnamon rufous; buff streak between eyes and nose; upper lip black; outer side of arms and legs like back with the outer edge of legs ochraceous buff; entire under parts buff, darkest on the breast; tail Prout's brown, hairs tipped with golden yellow.

Measurements. Total length, 323; tail, 180; (skin). Skull: occipito-nasal length, 31; Hensel, 25; zygomatic width, 23; intertemporal width, 15; palatal length, 12; width of braincase, 19; length of upper molar series, 11; length of mandible, 20; length of lower molar series, 11.

Peters gave a figure of the head, in his text, and a plate by Wolf of a Galago in his paper published in 1863 (l. c.) under the name of GALAGO DEMIDOFFI, but in 1876, (l. c.) decided his example was not that species, and named it *Otolicnus pusillus.* The plate exhibits an animal very like H. DEMIDOFFI, with some slight differences, but these may possibly arise from faulty coloring. The only differences stated by Peters in the later paper to separate his example from H. DEMIDOFFI are its shorter ears and smaller size. No dimensions are in this paper, but they are given in the earlier one. Measurements in the Proceedings of the Zoological Society, (l. c.) are as follows: "total length, 2″ 2‴, tail 3″ 1‴, head 1″ 1‴, arms 1″ 5‴, legs 2″ 6‴, thigh 8, tibia 10, foot and tarsus 1″."

There is an error here as the head and tail are made to measure separately, nearly twice the total length.

I examined the type in the Berlin Museum. It is a baby and presents no characters to separate it from H. DEMIDOFFI.

Bates (l. c.) states that the "little *ôjam* is similarly found asleep, three or four huddled together in old nests of the squirrel *ôsen*. Some people have told me that the little Lemurs make their own nests, but it seems more likely that these are only old squirrel's nests. An *ôjam* that I kept alive once for several days made a chirping noise at night, as shrill as that of a cricket. In grasping anything with its hind hand, the clawed finger was always folded in the palm, under and not over the thing it grasped."

HEMIGALAGO DEMIDOFFI POENSIS (Thomas).

Galago demidoffi poensis Thos., Proc. Zool. Soc. Lond., 1904, p. 186.

FERNANDO PO GALAGO.

Type locality. Banterberi, Fernando Po, West Africa. Type in British Museum.

Genl. Char. Similar to H. DEMIDOFFI, but band on side of body paler; tips of hairs black.

Color. Upper parts and outer side of limbs mars brown darkest on dorsal region; yellowish white stripe between eyes and on nose; hands mars brown; feet brownish gray; under parts and inner side of limbs yellowish white; buff on abdomen; tail at base mars brown, remainder blackish brown, hairs tipped with golden. Ex type British Museum.

Measurements. Total length, 325; tail, 195; foot, 46; ear, 28, (Collector). Skull: occipito-nasal length, 38; Hensel, 22; zygomatic width, 24; intertemporal width, 15; palatal length, 12; breadth of braincase, 19; median length of nasals, 11; length of upper molar series, 10; length of mandible, 21; length of lower molar series, 11. Ex type British Museum.

HEMIGALAGO ANOMURUS (Pousargues).

Galago (*Hemigalago*) *anomurus* Pousarg., Nouv. Archiv. Mus. Hist. Nat., Paris, 1894, pp. 158, 164, pl. XI; *Id.* Ann. Scien. Nat. Paris, III, 7me Sér., 1896, p. 244.

Type locality. Upper part of the River Kemo, a tributary of the Oubongui, French Congo. Type in Paris Museum.

Geogr. Distr. Kemo River, French Congo, West Africa.

Genl. Char. Muzzle equal in length to diameter of orbit; tail shorter than head and body.

Color. Above yellowish rufous, darkest on nape, back and flanks; all the rest of pelage beneath white, the hairs white at tips, blue at the roots; inner side of legs buffy white; a white stripe on nose; orbital ring and sides of nose brownish black; tail bushy, bright russet; hands and feet pale brown. Ex type Paris Museum.

Measurements. Total length, 340; tail, 140; foot, 54; ear, 24. Skull: occipito-nasal length, 36; Hensel, 25; zygomatic width, 22; intertemporal width, 16; palatal length, 10; length of mandible, 20; length of upper molar series, 13; length of lower molar series, 10. Ex type Paris Museum.

This is a very small species with a rather bushy tail of a general rufous color tinged with yellow; the tail however being darker than the body and without any yellow tinge. This type is in a good state of preservation, and as yet has probably only slightly faded. There is no real gray hue on the upper parts, the plumbeous of the base of the hairs, when showing through on throat and under parts, alone giving an indication of a gray hue.

HEMIGALAGO THOMASI (Elliot).

Galago thomasi Elliot, Ann. Mag. Nat. Hist., XX, 7th Ser., 1907, p. 189.

THOMAS'S GALAGO.

Type locality. Fort Beni, Semliki River, Central Africa. Type in British Museum.

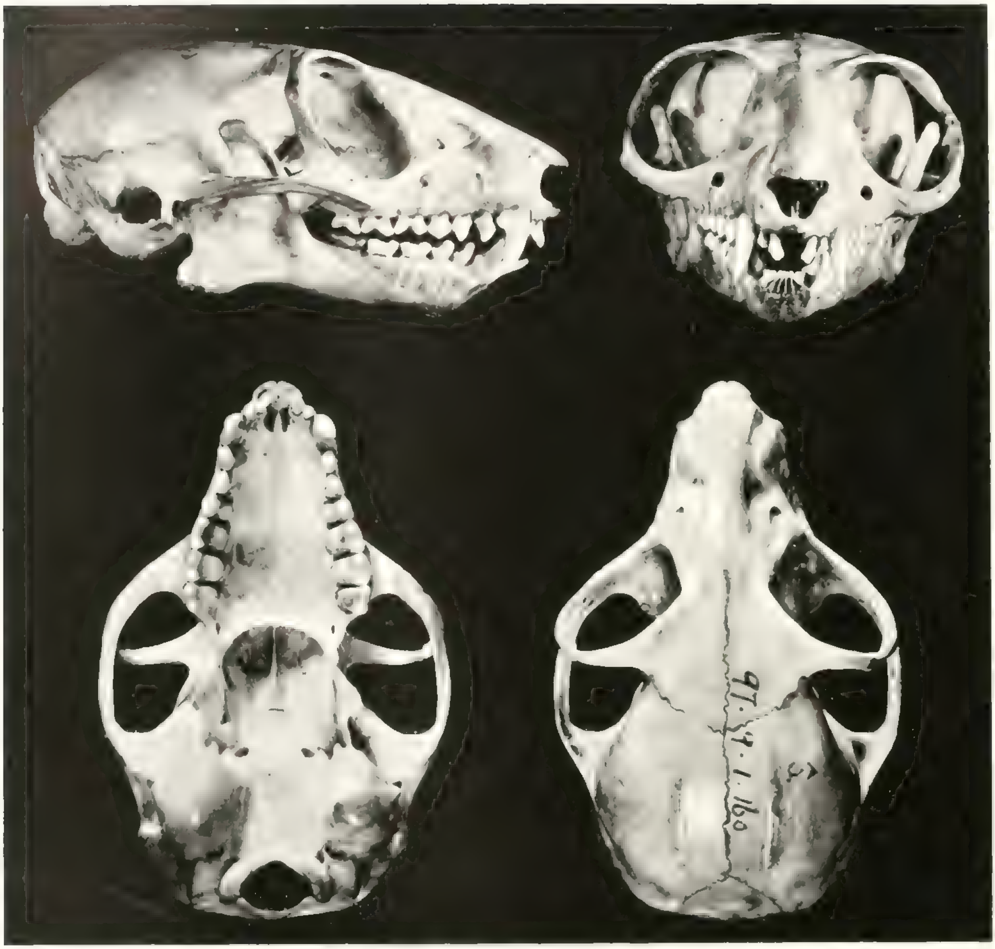
Geogr. Distr. Uganda to boundary line of the Congo Free State.

Genl. Char. Larger than H. DEMIDOFFI, color quite different. Skull much larger, differently shaped braincase, much broader in occipital region, and higher over roots of the zygomata; teeth much larger.

Color. Head and upper parts drab, washed with mars brown on head and dorsal region; stripe between eyes and nose yellowish white; outer side of limbs drab; under parts and inner side of limbs buff; tail mars brown. Ex type British Museum.

Measurements. Total length, 349; tail, 200; foot, 58; ear, 28. Skull: occipito-nasal length, 40; Hensel, 28; zygomatic width, 25; intertemporal width, 16; palatal length, 14; breadth of braincase, 21; median length of nasals, 12; length of upper molar series, 11; length of mandible, 22; length of lower molar series, 11. Ex type British Museum.

This, the fourth member of the genus HEMIGALAGO, differs from all in color and size, being the largest of all. The skull shows many and great differences from that of H. DEMIDOFFI or H. ANOMURUS, and cannot well be confounded or mistaken for them. The type was taken on the boundary line of Uganda and the Congo Free State, and a second and somewhat darker specimen at Dumo, Uganda. Whether it goes farther into the Congo region or is confined to Uganda is unknown.



CHIROGALE SIBREEI.

No. 97.9.1.160. Type. Brit. Mus. Coll. ½ larger than Nat. Size.

Subfamily 3. Lemurinæ.

GENUS CHIROGALE. MOUSE LEMURS.

$$\text{I. } \frac{2-2}{3-3};\quad \text{C. } \frac{1-1}{0-0};\quad \text{P. } \frac{3-3}{3-3};\quad \text{M. } \frac{3-3}{3-3} = 36.$$

CHEIROGALEUS (!) E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 172, pl. X. Type *Cheirogaleus* (!) *major* E. Geoffroy.

Myspithecus F. Cuv., Hist. Nat. Mamm., ed. 4°, 1833.
Cebugale Less., Spec. Mamm., 1840, p. 207.
Myscebus Less., Spec. Mamm., 1840, p. 207.
Myocebus Wagn., Wiegm., Archiv., 1841, II, p. 19.
Myslemur Blainv., Dict. Univ. Hist. Nat. Paris, VIII, 1846, p. 559.
Opolemur Gray, Proc. Zool. Soc. Lond., 1872, pp. 853-855, fig. 1, pl. LXX.
Chirogale F. Major, Novit. Zool., I, 1894, p. 1.

Head round; face furred; eyes large; approximate; ears membranaceous, projecting beyond the fur; hind limbs longer than the fore limbs; foot elongate; nails flat, except that of second finger which is pointed; tail longer than body. Skull: mastoid region not inflated; inner upper incisor larger than outer; last molar smaller than the first, with one internal and one external cusp; inner hind cusp of molars small, or absent; palate extending beyond last molar.

The Mouse Lemurs are small animals with tails as long or longer than the body. The head is round, with large eyes situated close together, and the ears which are thin, stand out beyond the fur. The legs are longer than the arms, and the foot is very long, the astralagus, or heel bone, being remarkably elongate. The nails are flat except that of the second finger which is pointed. In their habits these animals are nocturnal, and during the dry season some species become torpid, sleeping all the time. They are only found on the island of Madagascar. During the summer a large amount of fat is deposited on portions of the body at the root of the tail, enlarging this part greatly, and the creature is sustained during the period of hibernation by absorbing this unique store of food; resembling in this respect the Bears when they hibernate.

LITERATURE OF THE SPECIES.

1812. *E. Geoffroy Saint-Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*
In this paper the Author reproduces drawings of three Lemurs by Commerçon, reduced two thirds, upon which he establishes the genus CHEIROGALEUS (!) and gives to the three figures the names according to their respective size of C. MAJOR, C. MEDIUS, and *C. minor*. It is not known what became of Commerçon's types; they probably were not preserved. They are not now in the Paris Museum, but there is a specimen there marked C. MAJOR Geoff., TYPE, so he must have selected it to represent the species he called by that name. C. MEDIUS is now in the genus ALTILILEMUR, and *C. minor* is a MICROCEBUS, and is the same as *M.* MURINUS (Miller).

1828. *E. Geoffroy Saint-Hilaire, Cours de l'Histoire Naturelle des Mammifères.*
The Author here describes as *Cheirogaleus* (!) *milii,* the animal figured by Commerçon to which he had previously given the name of C. MAJOR.

1833. *Sir A. Smith, in South African Quarterly Journal.*
C. MAJOR is here redescribed as *C. typicus.*

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*
CHEIROGALE MAJOR is here called *Cebugale commersonii.*

1843. *J. E. Gray, in List of Specimens of Mammalia in the British Museum.*
Two species are here included in the genus CHEIROGALEUS (!) *C. smithii* = MICROCEBUS MURINUS, and *C. typicus* = C. MAJOR,

1854. *P. Gervais, Histoire Naturelle des Mammifères.*
Three species are here given of CHEIROGALE, only one of which belongs to the genus, viz., *C. milii* = C.MAJOR, while *C. furcifer* and *C. murinus* both belong to the genus MICROCEBUS.

1855. *Wagner, Schreber, Die Säugthiere in Abbildungen der Natur mit Beschreibungen.*
Various species are here included in CHEIROGALE, not all of which belong to the genus; *C. milii* = C. MAJOR Geoff., *C. typicus* = C. MAJOR; the others should be included in the genera MYOXICEBUS and MICROCEBUS, viz., *C. cinereus* = MYOXICEBUS GRISEUS; *C. olivaceus* = MYOXICEBUS OLIVACEUS; *C. furcifer* = MICROCEBUS FURCIFER; and *C. smithii* = MICROCEBUS MURINUS.

1856. *Giebel, Die Säugethiere.*
Like the Author just preceding, this Writer unites in this work with CHIROGALE, species of other genera: *C. milii* and *C. typicus* = C. MAJOR; *C. furcifer* is MICROCEBUS FURCIFER; *C. griseus* is a MICROCEBUS; *C. smithii* = MICROCEBUS MURINUS; and *C. olivaceus* = MYOXICEBUS OLIVACEUS.

1863. *J. E. Gray, in Proceedings of the Zoological Society of London.*
In this review of the LEMURIDÆ the Author includes in the genus 'CHEIROGALEUS (!)' three species, *C. milii,* and *C. typicus* both of which = CHIROGALE MAJOR Geoffroy, and *C. smithii* = MICROCEBUS MURINUS (Miller).

1864. *St. G. Mivart, in Proceedings of the Zoological Society of London.*
In this elaborate paper on the crania and dentition of the LEMURIDÆ only two species of the genus CHEIROGALE are given: *C. milii* = C. MAJOR, and *C. typicus* = C. MAJOR. In the arrangement of the species, however, *C. typicus* = C. MAJOR is erroneously placed in the genus MICROCEBUS.

1867. *St. G. Mivart, in Proceedings of the Zoological Society of London.*
In this paper the Author endeavors to decide upon the character separating the genera CHIROGALE and MICROCEBUS, and concludes that it will be possible (and perhaps even useful) still to retain, provisionally at least the distinction between them, though reposing mainly if not exclusively on a few cranial and dental characters. Yet in dividing the species he places FURCIFER and COQUERELI both of which belong to MICROCEBUS, with *C. milii* = C. MAJOR, as two of the three species he allots to CHIROGALE.

1868. *Grandidier, in Comptes Rendus.*
C. MAJOR is redescribed as *C. adipicaudatus.*

1870. *Grandidier, in Revue et Magasin de Zoologie.*
CHIROGALE CROSSLEYI first described.
J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in British Museum.
This is mainly a repetition of the review of the LEMURIDÆ given in the proceedings of the Zoological Society of London in 1863. Three species are included in CHEIROGALEUS (!), *C. milii* = C. MAJOR; *C. typicus* = C. MAJOR; and *C. smithii*

= MICROCEBUS MURINUS. In the appendix to the Catalogue a new genus *Azema* is created for the species last named, but which is quite uncalled for.

1871. *A. Milne-Edwards, in Revue Scientifique.* In his "L'Ordre des Lemuriens," this Author places the genera CHIROGALE, MICROCEBUS, and GALAGO in the family *Galaginæ,* as a section of *Microtarses,* and decides that MICROCEBUS and CHIROGALE, cannot be separated generically.

1872. *J. E. Gray, in Proceedings of the Zoological Society of London.* A new generic name, *Opolemur* is here proposed for *Chirogale milii* = C. MAJOR, which was already the type of CHEIROGALEUS (!) Geoff.

1873. *St. G. Mivart, in Proceedings of the Zoological Society of London.* In this paper the zoological rank of CHIROGALE and its species is discussed. Following the opinion of Prof. A. Milne-Edwards which is apparently here adopted, he considers CHIROGALE and MICROCEBUS the same generically, and that *C. smithii, minor,* MYOXINUS, *gliroides, rufus,* and *pusillus* are the same; that *C. milii* and *typicus* are synonymous, and *adipicaudatus,* and MAJOR Geoff., are the same as *C. milii,* and also *L. samati* Grandidier, is the same as *C.* (ALTILILEMUR) MEDIUS Geoff. Gray's genera of *Murilemur, Phanar, Mirza,* and *Prolemur* have no claim to distinctness.

1875. *Gunther, in Proceedings of the Zoological Society of London.* CHIROGALE TRICHOTIS first described as 'CHEIROGALEUS (!)' TRICHOTIS.

1876. *Schlegel, in Muséum des Pays-Bas, Simiæ.* In the genus 'CHEIROGALEUS (!)' only one species is given, which, as now understood, should be included in it; viz., *C. milii* = C. MAJOR Geoff. The others are *C. samati* = MYOXICEBUS MEDIUS (Geoff.); *C. pusillus* = MICROCEBUS MURINUS; and *C.* MYOXINUS, also a MICROCEBUS. C. TRICHOTIS is also mentioned but no specimen had been seen by the Author.

1894. *Forsyth-Major, in Novitates Zoologiæ.* This paper is a review of the genera CHIROGALE and MICROCEBUS, with critical remarks on the species. Three are recognized as belonging to CHIROGALE, viz., *C. milii* = C. MAJOR, C. MELANOTIS, and C. TRICHOTIS. Six are given to MICROCEBUS, and these will be considered under that genus, and one *L. samati* Grandidier, = Altililemur medius (E. Geoff.), is placed in Gray's genus *Opolemur*.

1894. *Forsyth-Major, in Novitates Zoologiæ.*
Chirogale melanotis first described.

1896. *Forsyth-Major, in Annals and Magazine of Natural History.*
Chirogale sibreei first described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

Five species are here recognized as belonging to the genus Chirogale, all natives of the Island of Madagascar. It cannot be said that the limits of their dispersion are as yet definitely ascertained, especially of those comparatively lately described, as of these we know little beyond the locality in which they were discovered. The one most familiar to Mammalogists, the C. major Geoffroy of this work, *C. milii* Auct., seems to have a rather extensive range on the Island, and is found from Pasandava on the north west coast to Tullare in the south, and on the east coast from Fort Dauphin in the south east, and in Betsileo Province in the lower wooded region, to Tamatave in the north east, and also according to Shaw in Central Madagascar. C. melanotis has been obtained at Vohemar on the north east coast, and C. sibreei was taken at Ankeramadinika one day's journey east of Antananarivo the capital, but the extent of the range of neither is known. C. crossleyi was procured by Grandidier in the forest of Antsianak, and C. trichotis was found by Mr. Crossley between Tamatave on the north east coast and Morondava on the west coast, but we have no knowledge of the limits within which the ranges of these two species are restricted. It is not improbable, however, that they may have a considerable dispersion in Central Madagascar.

KEY TO THE SPECIES.

A. Size moderately large; ears without tufts.
  a. External tips of ears, naked, black.
    a.′ Forehead and cheeks brown, hairs tipped with white ....*C. major.*
    b.′ Forehead and cheeks yellowish, hairs tipped with black ....*C. sibreei.*

b. External tips of ears hairy.
  a.' Larger; head pale brownish red...........*C. melanotis.*
  b.' Smaller; head rufous ....*C. crossleyi.*
B. Size small; ears tufted ....*C. trichotis.*

CHIROGALE MAJOR E. Geoffroy.

Cheirogaleus (!) *major* E. Geoff., Ann. Mus. Hist. Nat. Paris, 1812, XIX, p. 172, pl. X, fig. 1; *Id.* Cours Nat. Hist. Mamm., 1828, p. 24, 11me Leçon; Fitzing., Sitzungsb. Naturw. Akad. Wissensch. Wien, 1870, p. 656; Mivart, Proc. Zool. Soc. Lond., 1873, p. 492.

Cheirogaleus (!) *milii* E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 24, 11me Leçon; I. Geoff., Cat. Primates, 1851, p. 79; Gerv., Nat. Hist. Mamm., 1854, p. 171; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., 1856, fasc. V, p. 223, pl. VIII, figs. 32 and 32 a; Gray, Proc. Zool. Soc. Lond., 1860, p. 142; Mivart, Proc. Zool. Soc. Lond., 1864, p. 642; 1867, p. 971; Fitzing., Sitzungsb. Meth. Naturw. Akad. Wissensch. Wien, 1870, p. 657; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 77; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 324, (Part.); Shaw, Proc. Zool. Soc. Lond., 1879, p. 134; Bartl., Proc. Zool. Soc. Lond., 1879, p. 768.

Myspithecus typus F. Cuv., Hist. Nat. Mamm., 2me ed., 1833, p. 228, pl. LXXXIII.

Cheirogaleus (!) *typicus* A. Smith, S. Afr. Quart. Journ., II, No. 1, Part II, 1833, p. 50; Gray, Cat. Spec. Mamm., Brit. Mus., 1843, p. 17; *Id.* Proc. Zool. Soc. Lond., 1863, p. 142; 1872, p. 855, fig. 3; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 78; Fitzing., Sitzungsb. Meth. Natur. Akad. Wissensch. Wien, 1870, p. 664; Mivart, Proc. Zool. Soc. Lond., 1873, p. 492.

Cebugale commerçoni Less., Illust. Zool., 1831-2, p. 111; *Id.* Spec. Mamm., 1840, p. 213.

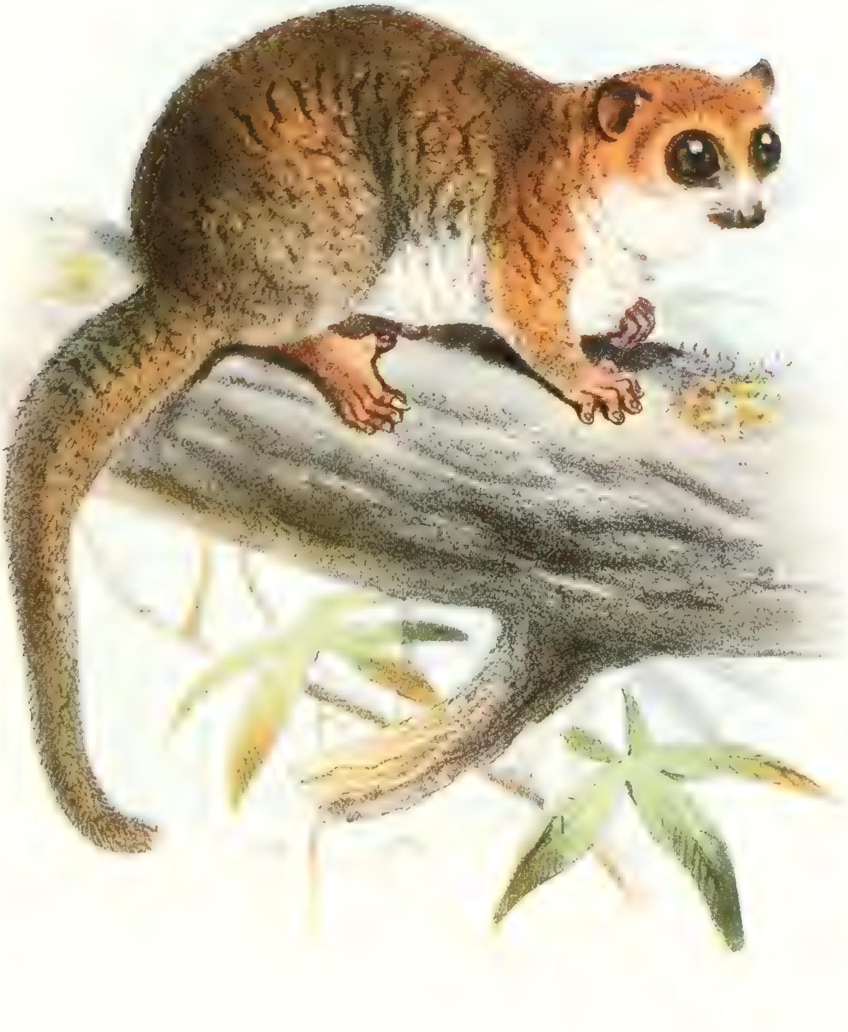
Lemur milii Blainv., Ostéog., Mamm., Primates, 1841, p. 12, pl. VII.

Lemur (*Chirogaleus* !) *milii* van d. Hoeven, Tijdsch. voor. Natuur. Geschied. Phys., 1844, p. 38.

Chirogaleus (!) *commerçonii* Schinz, Syn. Mamm., I, 1844, p. 104.

Microcebus milii Mivart, Proc. Zool. Soc. Lond., 1864, p. 641.

Microcebus typicus Mivart, Proc. Zool. Soc. Lond., 1864, p. 641.



CHIROGALE MAJOR

Chirogaleus (!) *adipicaudatus* Grandid., Compt. Rend., XIV, Dec. 1868; *Id.* Ann. Scien. Nat., X, 1868, p. 378.

Opolemur milii Gray, Proc. Zool. Soc. Lond., 1872, p. 853.

Chirogale milii Mivart, Proc. Zool. Soc. Lond., 1873, p. 492; F. Major, Novit. Zool., I, 1894, p. 21, pl. XI, figs. 1, 8, 9; Forbes, Handb. Primates, I, 1894, p. 50.

MILIUS'S MOUSE LEMUR.

Type locality. Madagascar. Type in Paris Museum.

Geogr. Distr. Eastern coast of Madagascar; Fort Dauphin to Tamatave; also in the lower wooded regions of Betsileo Province; and on the west coast from Tullare to Pasandava, Central Madagascar. (Shaw).

Genl. Char. Nose rather broad; ears moderate, sparsely haired; braincase moderately arched; orbits large; palate extending beyond last molars with rather large posterior perforations; bullæ moderately large; first premolar larger than second; upper inner incisors broad, flat at tips.

The type of C. MAJOR Geoffroy is in the Paris Museum and is identical with his *C. milii,* and as the first name was published fourteen years before the latter, it will of course take precedence, and *milii,* by which appellation the species has been so long known, must become a synonym. The type is in very good condition and may be described as follows: orbital ring blackish brown; whitish spot between eyes; no facial streaks; face, top and sides of head, and upper part of body to rump, and the tail pale reddish brown inclining to a buff; flanks and outer side of limbs, hands and feet, reddish brown or buff paler than the back; upper lip toward corner of mouth, chin, throat, inner side of limbs and under part of body white.

Measurements. Total length, 609.6; tail, 278.5; foot, 51.4.

The type of *C. milii* while faded somewhat, has undergone less change than most of the types of the earlier species in the Paris Museum. It is a reddish brown animal with a yellowish white sheen, produced by the tips of the hairs, and with a long dull brownish tail darkest at the tip. The species varies so considerably in color among individuals that the type can only at best give an idea of but one phase of coloring, with which other examples would only agree in part.

A general description of the species would be somewhat as follows.

Color. Varying considerably among individuals; head and neck brownish gray, sometimes grizzled with silver gray washed with rufous of varying intensity, this color sometimes extending over the entire upper parts; in other examples the upper parts are ashy brown; under parts and inner side of limbs yellowish or whitish yellow; orbital ring black; nose and face between eyes light gray; hands and feet dark brown; tail pale rufous with white tip, or ashy brown for entire length.

Measurements. Total length, about 580; tail, 275. Skull: occipito-nasal length, 56; Hensel, 47; intertemporal width, 16; palatal length, 24; zygomatic width, 38; median length of nasals, 18; width of braincase, 28; length of upper molar series, 19; length of mandible, 37; length of lower molar series, 20.

Cheirogaleus (!) *typicus* Smith, is undoubtedly the same as the present species. The type is in the British Museum and the following description is taken from it.

Head and upper parts pale rufous, hairs tipped with gray more profusely on the rump and sides; orbital ring black; outer side of limbs and the tail like back; space between eyes and top of nose without hairs, these having slipped off; entire under parts yellowish.

Measurements. Skull: occipito-nasal length, 54; zygomatic width, 34; intertemporal width, 16; median length of nasals, 19; width of braincase, 26; length of upper tooth row, 18; length of mandible, 34; length of lower tooth row, 16.

Mr. Shaw, (l. c.) had one of this species in captivity and he relates that it lived in a small box, but was allowed to exercise in the room at night. It was nocturnal in its habits, and was brought from the forest on the lower part of the eastern side of Betsileo province. It ran about on all fours, but sat up to eat, holding its food in its hands. He imagined the animal hibernated, for in the winter, (June), after exercising for several nights, on opening the box one evening, it was found asleep and quite cold. He thought it was dead, but on holding it to the fire and rubbing it, it gradually awoke, and after having been thoroughly warmed it was none the worse in health. This happened several times, and from the fact that the tail became suddenly enlarged, it probably would, if in its native forest, have slept through the winter. It made a nest of leaves and dry grass, scooping a place in it just large enough to contain its body, and carefully covering itself with the loose material. Mr. Shaw considered it rare in Madagascar, for he was only able to obtain this individual, although he kept a man two months in the forest seeking it. Of course its nocturnal habits make its capture more difficult. His animal was easily tamed, and became very affectionate, coming when called by name, and enjoyed being handled.

CHIROGALE MELANOTIS Major.

Chirogale melanotis F. Major, Novit. Zool., I, 1894, p. 25, pl. II, fig. 10.

Cheirogaleus (!) *melanotis* Forbes, Handb. Primates, I, 1894, p. 52; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 548, Zool. Ser.

BLACK-EARED MOUSE LEMUR.

Type locality. Vohemar, north east coast of Madagascar. Type in British Museum.

Genl. Char. Similar to C. MAJOR, but ears black; fur more silky. Skull smaller; face longer; nasals broader; last lower molar with a distinct heel.

Color. Top of head, neck, upper parts and tail light brownish red; outer side of limbs paler; ears and orbital ring black; pale grayish rufous stripe between eyes on to nose; grayish stripe on side of neck extending from throat; entire under parts and inner side of limbs grayish white with a yellow tint. Ex type British Museum.

Measurements. Total length, 490; tail, 225. Skull: occipito-nasal length, 51; Hensel, 42; zygomatic width, 31.5; palatal length, 20; width of braincase, 25; median length of nasals, 18; length of upper tooth row, 15; length of mandible, 32; length of lower tooth row, 16. Ex type British Museum.

This form is very similar to C. MAJOR, but is slightly more red, and can always be distinguished by its black ears. The color of the tail of the two species is very much the same.

CHIROGALE SIBREEI Major.

Chirogale sibreei F. Major, Ann. Mag. Nat. Hist., 1896, p. 325.

Type locality. Ankeramadinika, one day's journey east of Antananarivo, Capital of Madagascar. Type in British Museum.

Genl. Char. Teeth larger than in C. MELANOTIS, canines much larger; upper tooth rows only slightly divergent posteriorly; molars nearly equal, the last slightly smaller; first upper premolar longest, the third premolar shortest and broadest; palate extending beyond last molars; posterior openings small and narrow; inner upper incisors longer than outer; first lower premolar canine-like, much longer than the others, curved and pointed.

Color. Forehead, around eyes, space between eyes and cheeks yellowish or buffy; top of head, neck, and upper part of body grayish brown darkest on dorsal line; outer side of limbs like back; orbital ring black; inside of ears naked, black; entire under parts and inner side of limbs gray, with a yellowish tinge; hands and feet brown; tail, basal half above like back, paler beneath, remainder pale reddish brown with white tipped hairs. Ex type British Museum.

Measurements. Total length about 500; tail, 250. Skull: occipito-nasal length, 47; Hensel, 44; zygomatic width, 31; intertemporal breadth, 20; palatal length, 19; width of braincase, 24; median length of nasals, 17; length of upper tooth row, 14; length of mandible, 20; length of lower tooth row, 15.5. Ex type in British Museum.

This animal is about the same in size as C. MELANOTIS, and might pass for a gray phase of that species were it not for the naked ears, those of C. MELANOTIS being rather closely haired. The skulls show differences also, the rostral portion of C. SIBREEI being much narrower, and the nasals more slender. The tooth rows are straighter, not curving outward as in C. MELANOTIS.

CHIROGALE CROSSLEYI Grandidier.

Chirogaleus crossleyi Grandidier, Rev. Mag. Zool., 1870, p. 49; Forbes, Handb. Primates, I, 1894, p. 53.

CROSSLEY'S MOUSE LEMUR.

Type locality. Forests east of Antsianak, Madagascar.

Color. "Parties supérieures roussâtres, surtout la tête, parties inférieures blanchâtres. Tête énorme, arrondie. Cercle noir autour des yeux. L'intérieur des oreilles est recouvert de poil brun foncé, et leur sommet est bordé de noir. Queue courte et très fournie. Oreilles petites. Longeur du corps, 20 cent., des membres postérieures, 10 cent., des oreilles, 1 cent."

Neither the type nor any specimen of this species could be found in the Paris Museum during my visits there.

CHIROGALE TRICHOTIS Gunther.

Chirogaleus (!) *trichotis* Gunth., Proc. Zool. Soc. Lond., 1875, p. 78.

Chirogale trichotis F. Major, Novit. Zool., I, 1894, p. 26; Forbes, Handb. Primates, I, 1894, p. 52.

TUFTED-EAR MOUSE LEMUR.

Type locality. Between Tamatave and Morondava, Madagascar. Type in British Museum.

Geogr. Distr. Madagascar, Forests of Antsianak.

Genl. Char. Size small; ears tufted; tail shorter than body.

Color. Brown gray on upper parts and head, with numerous rather long white hairs on the body; forehead and beneath eyes buff; orbital ring, black; light buff space between eyes, becoming gray on nose; ear tufts brown, tips of hairs white; outer side of limbs like back; rufous dorsal line from middle of back to tail; under parts yellowish white, base of fur plumbeous; hands and feet grayish white in some lights; tail reddish, darker than back, but lighter than dorsal line. Ex type British Museum.

Measurements. Total length, about 300; tail, 154. Skull: occipito-nasal length, 37; Hensel, 26; zygomatic width, 22; intertemporal width, 18; palatal length, 15; width of braincase, 19; median length of nasals, 12; length of upper tooth row, 10; length of mandible, 21; length of lower tooth row, 10. Ex type British Museum.

This species differs from all the members of this genus in the tufts of hair standing out from the ears and sides of head, above the ears. The fur is soft and woolly and it is one of the smaller forms of the group.

GENUS MICROCEBUS. DWARF LEMURS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{3-3}{3-3}; \quad \text{M. } \frac{3-3}{3-3} = 36.$$

MICROCEBUS E. Geoff., Cours Hist. Nat. Mamm., 11me Leçon, 1828, p. 24. Type *Lemur pusillus* E. Geoffroy, = *Lemur murinus* Miller.

Scartes Swains., Nat. Hist. and Class. Quad., 1835, p. 352.

Gliscebus Less., Spec. Mamm., 1840, p. 207.

Mirza Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, British Museum, 1870, p. 131.

Phaner Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, British Museum, 1870, p. 131.

Azema Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, British Museum, 1870, p. 132.

Murilemur Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, British Museum, 1870, p. 133.

Size small; fore limbs shorter than hind limbs; nose short; eyes large, approximate; ears elongate; mammæ four, pectoral two and ventral two. Skull: braincase high; facial region short; squamosal region less inflated than in Galago; inner upper incisor larger than outer; no diastema between upper canine and first premolar; molars with three sharp cusps, basal ring swollen and internally forming a hind cusp; last upper molar smaller than the first with rudimentary hind cusp; palate extends behind last molar.

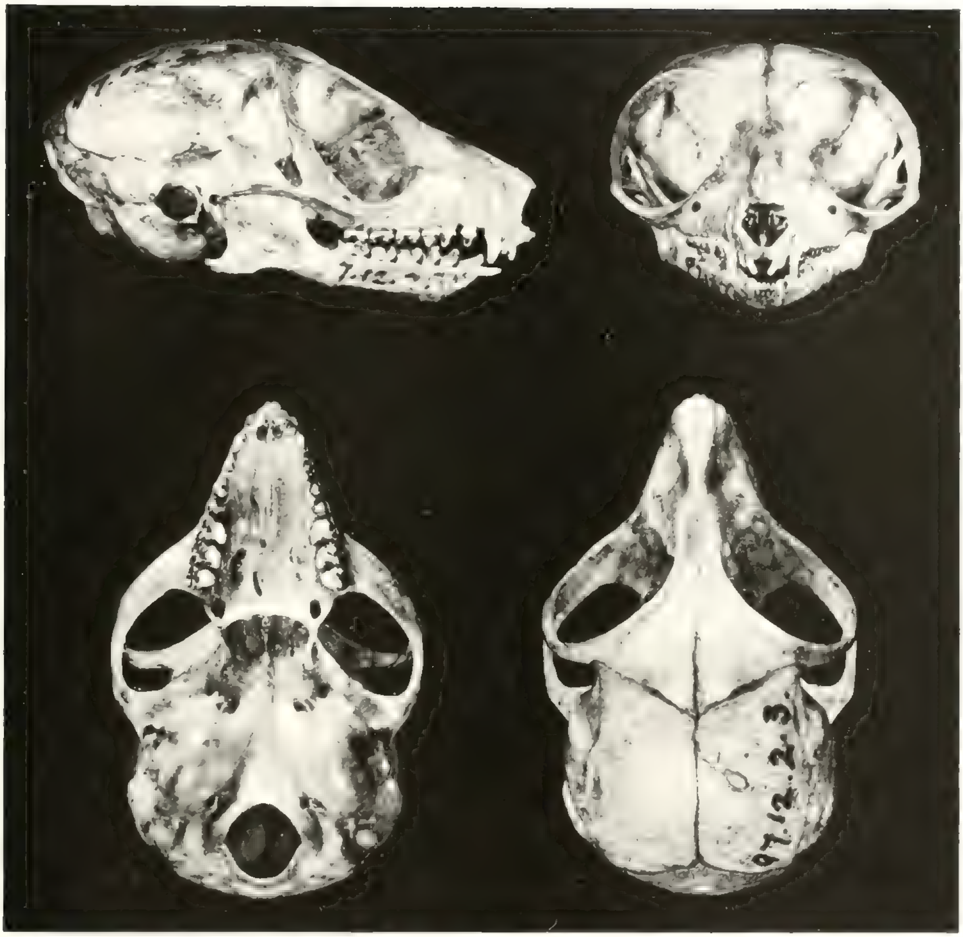
LITERATURE OF THE SPECIES.

1777. *J. F. Miller, Cimelia Physica.*
Microcebus murinus first described as *Lemur murinus.*

1784. *Boddært, Elenchus Animalium.*
In this work Microcebus murinus is placed in the genus *Prosimia* as *P. minima.*

1788. *J. F. Gmelin, Systema Naturæ.*
Microcebus murinus is here recognized under Miller's name of *Lemur murinus.*

1795. *E. Geoffroy St. Hilaire, in Bulletin de la Société Philomatique de Paris.*


7.12.2.3
97.12.2.3

MICROCEBUS MURINUS.

No. 97.12.2.3. Brit. Mus. Coll. Type. Nat. Size.

Microcebus murinus is here redescribed as *Lemur pusillus.*

1812. *E. Geoffroy St. Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*

Microcebus murinus renamed *Cheirogaleus* (!) *minor.*

1828. *E. Geoffroy St. Hilaire, Cours de l'Histoire Naturelle des Mammifères.*

Microcebus murinus is redescribed as *Galago madagascariensis.*

1839. *de Blainville, Ostéographie.*

Microcebus furcifer first described as *Lemur furcifer.*

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*

In this list, Microcebus murinus appears under various genera and specific appellations, giving rise to a certain amount of wonder, for it is called *Myscebus palmarum, Gliscebus murinus,* and *Gliscebus rufus.*

1842. *J. E. Gray, in Annals and Magazine of Natural History.*

Microcebus murinus is renamed *Galago minor;* and *Cheirogaleus* (!) *smithi.*

1852. *Peters, in Naturwissensshäftliche Reise nach Mossambique, Säugethiere.*

Microcebus myoxinus first described.

1863. *J. E. Gray, in Proceedings of the Zoological Society of London.*

In this communication intended for a review of the Lemuridæ, the genus *Lepilemur* (!) (Lepidolemur), was proposed, to contain Microcebus murinus; M. myoxinus; M. furcifer; and Lepidolemur mustelinus; only the last of the species being properly included.

1864. *St. George Mivart, in Proceedings of the Zoological Society of London.*

A critical review based on the crania and dentition of the Lemuridæ. While the results arrived at will be discussed under the various genera, as they are reached, it is only necessary here to consider the Author's conclusion regarding the species of Microcebus. Five are recognized: M. myoxinus; *M. smithi;* and *M. pusillus;* the last two = M. murinus (Miller); *M. typicus* = Chirogale major; and M. furcifer. The Author states, however, that owing to the scarcity of materials "I have not attempted to work out the species," and that he does not intend to imply that all those given are distinct, some only having been adopted provisionally on the authority of others.

1867. *Grandidier, in Revue et Magasin de Zoologie.*
MICROCEBUS COQUERELI first described as *Cheirogaleus* (!) *coquereli.*

1868. *Grandidier, in Annales du Muséum d'Histoire Naturelle de Paris.*
MICROCEBUS MURINUS redescribed as *Cheirogaleus* (!) *gliroides.*

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in the Collection of the British Museum.*
In this list, MICROCEBUS MURINUS is given as *Cheirogaleus* (!) *smithi* Gray, and placed in the genus LEPILEMUR (!), and comments are made on MICROCEBUS MYOXINUS Peters, the Author, however, never having seen a specimen. In the Appendix several genera are proposed for the species of MICROCEBUS as follows: *Murilemur* for MICROCEBUS MURINUS; *Phaner* for M. FURCIFER; and *Mirza* for M. COQUERELI. All these are quite unnecessary.

1872. *J. E. Gray, in Proceedings of the Zoological Society of London.*
This paper is practically a repetition of a review of the LEMURIDÆ given in the Catalogue above mentioned, except that whereas the species of MICROCEBUS were in the previous publication placed in various genera, here they are included in one LEPILEMUR (!) with the addition of L. MUSTELINUS Geoff., (which is generically distinct from the species of MICROCEBUS), and with the omission of M. MYOXINUS Peters. The genera *Phaner* and *Mirza* are suppressed.

1873. *Mivart, in Proceedings of the Zoological Society of London.*
This is another of the Author's elaborate papers on the LEMURIDÆ, in which he raises the entire group to a suborder of the Primates, as LEMUROIDEA, and gives very cogent and pertinent reasons why they should not be considered as an order. He also considers that MICROCEBUS and CHIROGALE are generically the same, to be known by the latter name, the one first designated. He cites A. Milne-Edwards' opinion regarding the species of the genus CHIROGALE with which he apparently concurs; viz., that *smithi, minor,* MYOXINUS, *gliroides, rufus,* and *pusillus* are all one; that *milii, typicus,* and *adipicaudatus* are the same as MAJOR Geoffroy; that *samati* is MEDIUS Geoff., and

that COQUERELI is distinct. With this opinion the present writer agrees, with the exception of MYOXINUS of which form the material available is not sufficient to prove that it should not be separated from the rest as a distinct species or race. As regards uniting the species of the two genera; the opinion previously expressed by the Author (Proc. Zool. Soc. Lond., 1867, p. 965), "that it will be possible and perhaps even useful to retain, provisionally at least, the distinction between CHEIROGALEUS (!) and MICROCEBUS, though reposing mainly if not exclusively on a few cranial and dental characters," may not be disregarded.

1876. *Schlegel, Muséum d'Histoire Naturelle des Pays-Bas, Simiæ.*
In this work in the arrangement of the species of Primates MICROCEBUS FURCIFER is placed in the genus *Phaner,* and M. COQUERELI in *Mirza,* although Gray had abandoned both four years previously. M. MAJOR, called *milii,* and M. MURINUS called *pusillus,* with M. MYOXINUS (nec Peters), = M. MURINUS, are placed in the genus CHEIROGALEUS (!).
The genus MICROCEBUS receives no recognition.

1894. *Forsyth-Major, in Novitates Zoologicæ.*
This paper is a critical review of the literature and species of MICROCEBUS, OPOLEMUR, and CHIROGALE. Of MICROCEBUS, the first species is given as *M. minor* Gray, the MURINUS Miller being rejected, for the reason that Miller's plate of *L. murinus* = *L. bicolor* Gmel., which is not proven. The others are M. MYOXINUS, and *M. smithi* = M. MURINUS Miller.

1910. *Kollmann, M. in Bulletin du Muséum National d'Histoire Naturelle, Paris.*
A paper on the genera CHIROGALE and MICROCEBUS. The material upon which the Author bases his conclusions is in the Paris Museum, important collections in other National Institutions having evidently not been examined. CHEIROGALE is accepted as a genus and a description of it given, but no species mentioned. MICROCEBUS and *Opolemur* (ALTILILEMUR of this work), are considered to be the same, and the following species named: MICROCEBUS SAMATI = ALTILILEMUR MEDIUS (E. Geoff.), M. *minor* = M. MURINUS (Miller). The following forms are regarded as subspecies all in MICROCEBUS. M. *minor minor* = M. MURINUS (Miller); *M. minor griseorufus* nov. subsp. = M. MURINUS (Miller), red phase; M. *pusillus* MYOXINUS = M. MYOXINUS Peters; M. *pusillus minor smithi* = M.

murinus (Miller); and M. *minor rufus* = M. murinus (Miller). Evidently Miller's description of murinus was unknown to the Author, as was also the Bibliography of the species of Microcebus, as some are reinstated, e. g. *smithi, rufus,* which have been long since relegated to the synoptical list. The paper is one apt to lead investigators astray, by the recognition of individual examples not entitled to any distinctive rank, while Microcebus coquereli (Grandidier), the type of which is in the Paris Museum, is not mentioned at all.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

The members of this genus are all found in the Island of Madagascar; some with quite an extensive dispersion, but the range of others has not yet been entirely ascertained. On the west coast from Cape St. Vincent to Tullear on St. Augustine Bay, M. myoxinus is found, and from Cape St. Vincent to Helville on the same coast M. coquereli occurs. M. murinus ranges from Betsileo Province to Fort Dauphin on the south east coast, and northerly from St. Augustine Bay on the south west coast. Its complete range has not yet been determined. The species with the greatest known range is M. furcifer which goes from Fort Dauphin on the east coast to Mt. Ambre, and then on the west coast to Cape St. Vincent, thus being found throughout the northern section of Madagascar.

KEY TO THE SPECIES.

A. Size small.
  - *a.* Sides of nose brown .... *M. murinus.*
  - *b.* Sides of nose black .... *M. myoxinus.*

B. Size large.
  - *a.* No dorsal band .... *M. coquereli.*
  - *b.* With dorsal band, bifurcating on forehead ...... *M. furcifer.*

Microcebus murinus (Miller).

Lemur murinus Miller, Cim. Phys., 1777, p. 25, pl. XIII; Gmel., Syst. Nat., 1788, p. 44, No. 7; Shaw, Genl. Zool., I, 1800, p. 106, pl. XXXVII; Fisch., Syn. Mamm., 1830, p. 77, (Addenda); Wagn., Schreb., Säugth. Suppl., I, 1840, p. 278.

Prosimia minima Bodd., Elench. Anim., 1784, p. 66.

Lemur prehensilis Kerr, Anim. Kingd., 1792, p. 88, No. 104, gray phase?

Lemur pusillus E. Geoff., Bull. Soc. Philom., 1er Part., 1795, p. 89; Fisch., Anat. Maki, 1904, p. 24.

Cheirogaleus (!) *minor* E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 171, pl. X, fig. 3; Kollm., Bull. Mus. Nat. Hist. Nat., No. 6, 1910, p. 303.

Galago madagascariensis E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 166; Kuhl, Beitr., 1820, p. 47, pl. VI, fig. 1; Smith, S. Afr. Journ., II, 1835, p. 31; Gray, Proc. Zool. Soc. Lond., 1863, p. 149.

Microcebus pusillus Geoff., Cours Hist. Nat. Mamm., 1828, p. 25, 11me Leçon; Waterh., Cat. Mamm. Zool. Soc. Lond., 2nd ed., 1838, p. 12; Mivart, Proc. Zool. Soc. Lond., 1864, p. 641.

Microcebus murinus Martin, Proc. Zool. Soc. Lond., 1835. p. 125; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 278; V, 1855, p. 154; Fitzing., Sitzungsb. Metth. Nat. Akad. Wiss. Wien, 1870, p. 712.

Myscebus palmarum Less., Spec. Mamm., 1840, p. 214.

Gliscebus murinus Less., Spec. Mamm., 1840, p. 216.

Gliscebus rufus Less., Spec. Mamm., 1840, p. 217.

Galago minor Gray, Ann. Mag. Nat. Hist., X, 1842, 1st Ser., p. 255; *Id.* List Spec. Mamm. Brit. Mus., 1843, p. 17.

Cheirogaleus (!) *smithi* Gray, Ann. Mag. Nat. Hist., X, 1842, 1st Ser., p. 255; *Id.* Proc. Zool. Soc. Lond., 1863, p. 145; 1872, p. 856; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 78; Mivart, Proc. Zool. Soc. Lond., 1864, p. 642; 1867, p. 492; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 607.

Scartes murinus Schinz, Syn. Mamm., 1844, p. 106.

Otolicnus madagascariensis van d. Hoev., Tijdsch. Natuur. Geschied., XI, 1844, p. 43.

Otolicnus minor Wagn., Schreb., Säugth. Suppl., V, 1855, p. 159.

Microcebus rufus Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., Fasc. I, 1856, p. 231.

Lepilemur (!) *murinus* Gray, Proc. Zool. Soc. Lond., 1863, p. 143 *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 87.

Microcebus minor Mivart, Proc. Zool. Soc. Lond., 1864, p. 615; 1867, p. 972; Major, Novit. Zool., I, 1894, p. 8; Forbes, Handb. Primates, I, 1894, p. 55.

Cheirogaleus (!) *gliroides* Grandid., Ann. Mus. Hist. Nat. Paris, X, 1868, p. 378.

Azema smithi Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 134, Appendix; *Id.* Proc. Zool. Soc. Lond., 1872, p. 856, fig. 4, p. 857.

Murilemur murinus Gray, Proc. Zool. Soc. Lond., 1872, p. 857.

Chirogaleus (!) *pusillus* Mivart, Proc. Zool. Soc. Lond., 1873, p. 492; Fowler and Lydekk., Anim. Living and Extinct, 1891, p. 690.

Cheirogaleus (!) *myoxinus* Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 326, (nec Peters).

Microcebus smithi Major, Novit. Zool., I, 1894, p. 12; Shaw, Proc. Zool. Soc. Lond., 1879, p. 135.

Microcebus minor griseorufus Kollm., Bull. Mus. Nat. Hist. Nat., Paris, No. 6, 1910, p. 304.

Microcebus minor minor Kollm., Bull. Mus. Nat. Hist. Nat., Paris, No. 6, 1910, p. 304.

Microcebus pusillus minor smithi Kollm., Bull. Mus. Nat. Hist. Nat., Paris, No. 6, 1910, p. 304.

Microcebus minor rufus Kollm., Bull. Mus. Nat. Hist. Nat., Paris, No. 6, 1910, p. 304.

MILLER'S DWARF LEMUR.

Type locality. Madagascar.

Geogr. Distr. Betsileo Province to Fort Dauphin on the south east coast of Madagascar, and on the south west coast northerly from St. Augustine Bay. The exact limits of the species' dispersion cannot be said to have yet been definitely ascertained.

Color. Two phases, rufous brown or gray. The first has the head rusty brown; orbital ring and upper lip black; stripe between eyes and on nose, grayish white; upper parts of body rufous brown; dorsal line indistinct; sides of body and outer side of limbs mouse gray washed with rufous brown; entire under parts and inner side of limbs white, base of hairs plumbeous, this hue often showing on the surface; tail rufous brown like the back, but sometimes much paler; hands and feet gray. The other phase is mouse gray above, the back washed with rufous, a rufous spot over each eye; outer side of limbs mouse gray; entire under parts white; tail pale rufous.

Measurements. Total length about 300; tail, 150; foot, 26. Skull: occipito-nasal length, 33; Hensel, 20; zygomatic width, 21; intertemporal width, 16; palatal length, 11; median length of nasals, 8; width of braincase, 17; length of upper molar series, 8; length of mandible, 19; length of lower molar series, 9.

I have examined probably all the specimens of this species, under the various names given to it, and in its various styles of coloration, contained in all the great Museums of the world, save that in St. Petersburg, and I can find no character by which the examples called *murinus, pusillus, smithi, minor,* and others given in the above synoptical list, can be separated or distinguished the one from the other. Specimens vary greatly in their coloration even among those belonging to the two phases gray or rufous brown, and there is also an individual variation to be seen among the skulls. Various types are extant, such as *smithi* Gray, and the specimen that probably served as the type of *minor* Gray, both in the British Museum; and of *gliroides* Grandidier in the Paris Museum, and all belong to one or the other phase of the animal called by Miller *murinus.* It would seem that the confusion in synonomy, and the perplexity arising as to what name examples of this little creature should bear, has been caused by recognizing forms as distinct that really are not, and the difficulty of obtaining a uniformity of opinion among Mammalogists is emphasized by the fact that the specimens in different collections exactly similar, bear separate names.

Mr. Shaw, (l. c.) says that this Lemur inhabits a belt of forestland extending from the eastern forest into the heart of Betsileo Province a few miles north of Fianarantsoa, where the species is fairly abundant. It lives in the tops of the highest trees, and makes a nest of dried leaves closely resembling that of a bird. The food consists of fruits and insects, and Mr. Shaw frequently saw those he had in captivity catch the flies that entered their cage for the honey which was placed there. They were fond of moths and butterflies and ate them greedily. They were very shy and wild, and he never succeeded in taming one. Even among themselves they were quarrelsome and fought fiercely, uttering at the same time a cry like a shrill whistle. The teeth though minute are sharp, and they grip so firmly with them it is difficult to make them loosen their hold. They can leap, but they usually go on all fours, and they are very nimble among the branches. They have much strength in the hands and legs, and they would often hang by the feet head downwards, grasp food in the hands and then draw themselves upwards to their former position on their perch. During this movement the tail served as a balance, but was not used for holding on by, for it is in no sense prehensile. The eyes were large and brilliant, and the hands beautifully perfect, with ordinary sized finger nails; the second toe nail, however, being long and claw-like.

MICROCEBUS MYOXINUS Peters.

Microcebus myoxinus Peters, Naturw. Reis. Mossamb., Zool., Säugeth., I, 1852, pp. 14-20, Taf. III, Taf. IV, 6-9; Mivart, Proc. Zool. Soc. Lond., 1864, p. 640; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 88; Fitzing., Sitzungsb. Metth. Nat. Akad. Wiss. Wien, 1870, p. 927; Major, Novit. Zool., I, 1894, p. 11; Forbes, Handb. Primates, I, 1894, p. 56.

Lepilemur (!) *myoxinus* Gray, Proc. Zool. Soc. Lond., 1863, p. 144.

Microcebus pusillus myoxinus Kollm., Bull. Mus. Nat. Hist. Nat., Paris, 1910, No. 6, p. 304.

PETERS' DWARF LEMUR.

Type locality. Bay of Bombetok, Western Madagascar. Type in Berlin Museum.

Geogr. Dist. West and southwest coast of Madagascar from Cape St. Vincent to Tullear on St. Augustine Bay.

Genl. Char. Muzzle short; ears large; eyes large, round; fourth digit longest; second and fifth shortest; tail longer than body.

Color. Head and upper part reddish brown, many hairs tipped with golden yellow; spot at lower corner of eyes, and side of nose black; stripe between eyes, white; cheeks rufous, throat buff; under parts of body and inner side of limbs, cream buff; tail dull brown, darker than the back; hands and feet gray. Ex specimen in British Museum.

Measurements. Total length, about 300; tail, 150. Skull: occipito-nasal length, 33; Hensel, 22; intertemporal width, 18; zygomatic width, 21; median length of nasals, 10; length of upper molar series, 9; length of mandible, 20; length of lower molar series, 19. Ex type in Berlin Museum.

The type of this species is in the Berlin Museum and has evidently faded considerably, for now the sides of the head, lips, entire under parts and inner side of arms are white; upper part of back is whitish brown, and only the dorsal stripe on lower back is reddish brown; tail ochraceous buff above, yellowish white beneath. It has all the appearance of having been similar in color to the British Museum specimen above described, but faded by light.

This species is about the size of MICROCEBUS MURINUS and is not unlike that form in its general appearance. In fact so nearly do they resemble each other that I have found, when a Mammalogist had no personal knowledge of M. MYOXINUS and depended entirely upon descriptions, that the name of this species had been given to examples of M. MURINUS. Is is much more rare in collections than the species just named, which accounts in a measure for its relative being at times compelled to represent it, and they are really so much alike that I could only find one fairly conspicuous external character to separate them, viz., the color of the nose, that member having its side black in the present species, but brown in M. MURINUS. The type is now practically useless for determining the species, as it does not resemble at all Peters' published colored figure, nor agree with his description. As to the ultimate standing of M. MYOXINUS, whether it will be enabled to maintain a distinct specific rank, or will eventually be ascertained to be a race of the longer known form or possibly identical with it, cannot be satisfactorily decided at the present time. The acquisition of much additional material to that already existing in collections is imperatively needed before any definite conclusion is reached. Until such a time arrives, it will be necessary to leave them as representatives of distinct species.

MICROCEBUS COQUERELI (Grandidier).

Cheirogaleus (!) *coquereli* Grandid., Rev. Mag. Zool., XIX, 1867, pp. 85, 316.

Microcebus coquereli Mivart, Proc. Zool. Soc. Lond., 1867, p. 966; 1873, p. 492; Schleg. and Poll., Rech. Faun. Madag., Mamm., 1868, p. 12, pls. VI, VII, fig. 2 A; F. Major, Novit. Zool., I, 1894, p. 14.

Mirza coquereli Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 135; *Id.* Proc. Zool. Soc. Lond., 1872, p. 85; 1873, p. 492; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 321.

COQUEREL'S DWARF LEMUR. Native name *Sietui* (Schleg. and Pollen).

Type locality. Passandava Bay near Morondava, S. W. coast of Madagascar. Type in Paris Museum.

Geogr. Distr. Island Africaine, (Schleg. and Pollen); west coast of Madagascar from Cape St. Vincent to Helville.

Genl. Char. Similar to M. FURCIFER, but smaller; second and third upper molar with five cusps, two outer, two inner and one posterior; last premolar with one long outer, and one small inner cusp; last lower molar with five cusps.

Color. Head and upper parts rufous, hairs tipped with yellowish gray; under parts yellowish, plumbeous under fur showing through; nose rufous; orbital ring black; arms and legs on outer side rufous, duller than back, inner side pale yellow; tail dark rufous, hairs black tipped, basal end paler; ears large, naked, flesh color. Ex type Paris Museum.

Female. Like male, but under parts more yellowish or buff.

Measurements. Total length, 548; tail, 331. Skull: occipito-nasal length, 50; Hensel, 39; intertemporal width, 18.5; zygomatic width, 30; palatal length, 21; width of braincase, 26; median length of nasals, 17; length of upper molar series, 14; length of mandible, 30; length of lower molar series, 15. Ex type Paris Museum.

This is a moderate sized reddish colored Lemur, without any particular markings. The skull is highly arched, and with large bullæ. This species was obtained, (Schleg. and Pollen, l. c.) in the north western part of the Island Africaine. It lives in the most impenetrable forests, and makes a nest a foot and a half in diameter, constructed of straw and dead leaves, in which it sleeps during the day, only leaving it towards night to seek its food. Only one specimen was procured, which would seem to show the species was not very abundant, at least in the locality where this example was discovered.

MICROCEBUS FURCIFER (Blainville).

Lemur furcifer Blainville, Ostéog. Mamm., Primates, 1839, p. 35, pl. III.

Cheirogaleus furcifer I. Geoff., Compt. Rend., XXXI, 1850, p. 876; *Id.* Cat. Primates, 1851, p. 77; Gerv., Hist. Nat. Mamm., 1854, p. 171; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 149; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., 1856, fasc. I, p. 223; Grandid., Rev. Mag. Zool., 1867, p. 64; Fitzing., Sitzungsb. Metth. Nat. Wiss. Wien, 1870, p. 660; Mivart, Proc. Zool. Soc. Lond., 1873, pp. 492, 502, fig. 16; Flow. and Lydekk., Anim. Living and Extinct, 1891, p. 690.

Lepilemur (!) *furcifer* Gray, Proc. Zool. Soc. Lond., 1863, p. 145; Mivart, Proc. Zool. Soc. Lond., 1864, p. 621, fig. 1867, p. 960; Schleg. and Poll., Recher. Faun. Madagas., Mamm., 1868, p. 8, pl. V; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 88.

Phaner furcifer Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, pp. 132, 135, Appendix; *Id.* Proc. Zool. Soc. Lond., 1872, p. 855; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 319.

Microcebus furcifer Major, Novit. Zool., I, 1894, p. 16; Forbes, Handb. Primates, I, 1894, p. 59.

FORK-MARKED DWARF LEMUR. Native name *Walouvy.* (Schleg. and Pollen).

Type locality. Madagascar.

Geogr. Distr. Eastern coast of Madagascar from Fort Dauphin on the south to Mt. Ambre on the north, and down west coast to Cape St. Vincent, inhabiting all the northern section across the island.

Genl. Char. Black dorsal streak continues to forehead, and there divides into two branches terminating over each eye. Size large for this genus. Inner upper incisors larger than outer. Skull: facial region long; palate extending beyond last molar; inferior margin of mandible concave, the angle produced backward not downward; upper incisors in advance of canines, posterior pair the larger; first upper premolar canine-like; second and third upper premolar with one cusp; lower incisors long; lower molars subequal.

Color. Upper parts reddish gray, brighter and more reddish on head and neck; outer side of limbs dark rufous, almost chestnut on the arms; throat pale rufous; chin and rest of under parts yellowish; a black stripe from lower part of back to crown of head where it bifurcates, each branch leaning towards inner side of ear and ending over the eye; hands and feet dark brown; tail bushy, dark reddish brown with black tip.

Measurements. Total length about 600; tail, 350. Skull: occipito-nasal length, 53; Hensel, 42; zygomatic width, 33; intertemporal width, 20; median length of nasals, 11; length of upper molar series, 14; length of mandible, 31; length of lower molar series, 12.

This pretty little species, according to Schlegel and Pollen, (l. c.) is found in numbers in the forests in the western part of Madagascar. It also dwells in the eastern part whence M. Goudot sent an example to the Paris Museum. Towards evening it leaves its lodging where it had slept during the entire day. In choosing this it prefers a hole in a tree which has two openings. Often such places are the dwellings of bees, and in that case, the *Walouvy,* the name the animal bears in the country, separates the hive of the insects from his own nest by a small bunch of straw or dried leaves. The natives pretend that it prefers the society of the bees to rob the honey of which it is very fond. It is much more nimble and agile than the ordinary Lemur, and its leaps are wonderful. Its cry, continually uttered during the night, is very piercing and resembles the syllables *ka-ka-ka-ka,* similar to the cry of the guinea fowl.

GENUS MIXOCEBUS. THE HATTOCK.

$$\text{I. } \frac{1-1}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{3-3}{3-3}; \quad \text{M. } \frac{3-3}{3-3} = 34.$$

MIXOCEBUS Peters, Monatsb. K. Preuss. Akad. Wiss. Berlin, 1874, p. 690, Taf. I-II. Type *Mixocebus caniceps* Peters.

Nose pointed; pad naked; eyes very large; ears small, rounded, mostly hidden in the fur, sparsely covered with hair; arms and legs long; fingers and toes with flat nails; tail as long as body. Skull: interparietal bone not lacking, but coalesced with parietal; incisors small, only one upper on either side; line of tooth rows slightly convex.

MIXOCEBUS CANICEPS Peters.

Mixocebus caniceps Peters, Monatsb. K. Preuss. Akad. Wiss. Berlin, 1874, p. 690, Taf. I, II; Forbes, Handb. Primates, I, 1894, p. 78.

THE HATTOCK.

Type locality. Madagascar. Type in Berlin Museum.

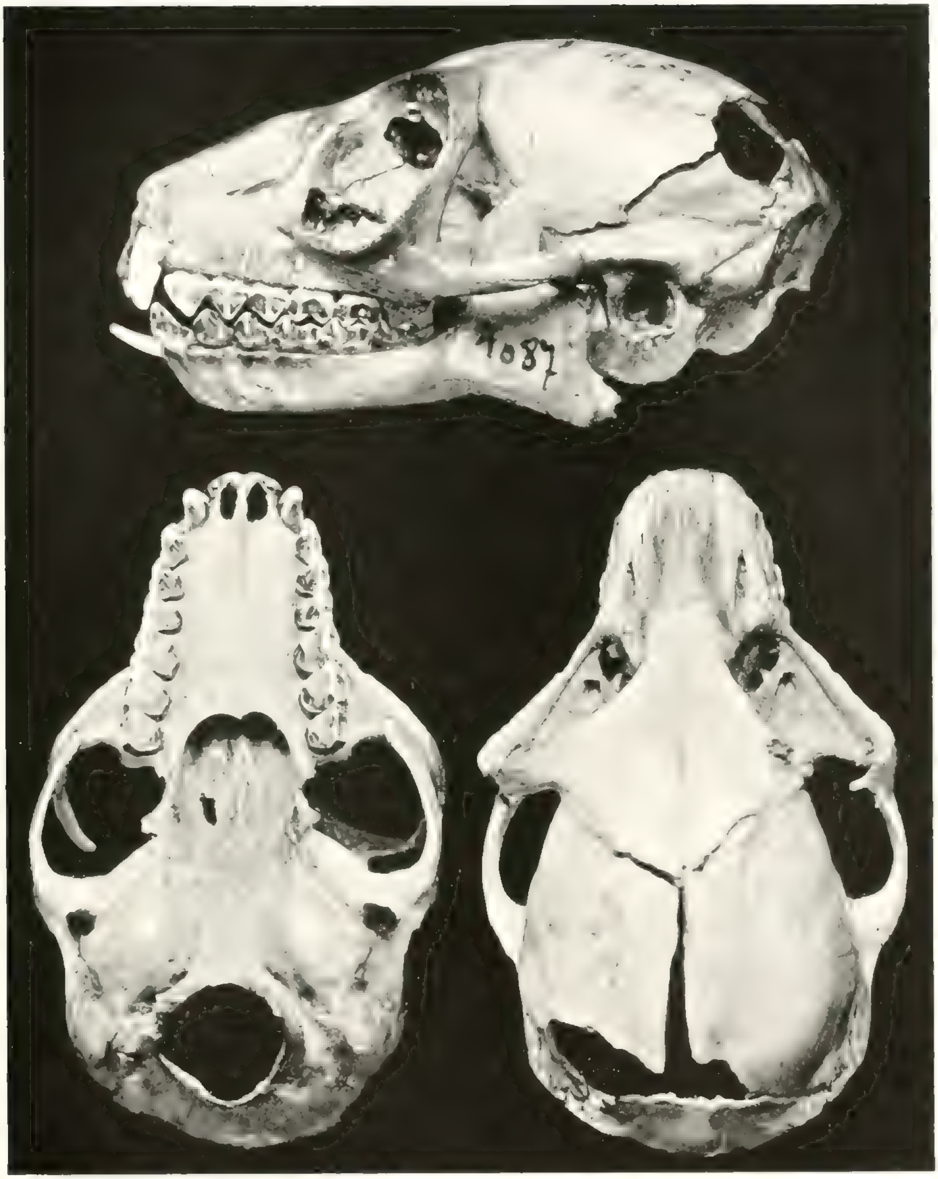
Geogr. Distr. Unknown.

Genl. Char. Those of the genus. About the size of GALAGO CRASSICAUDATUS, tail slightly longer than body, thick.

Color. Top of head dark gray, black spot in center; upper parts of body, and outer side of limbs sooty brown; under part of thighs ochraceous buff; hands blackish brown, feet paler, the buff of base of fur showing; forehead whitish gray; sides of head above and below ears whitish; sides of nose, and bar under eye blackish brown; brownish band across chest; patch on sides of lower neck; under parts and inner sides of thighs buff; inner side of arms and legs sooty brown; tail sooty grayish brown on basal half, grading into blackish brown at tip; ears flesh color. Ex type Berlin Museum.

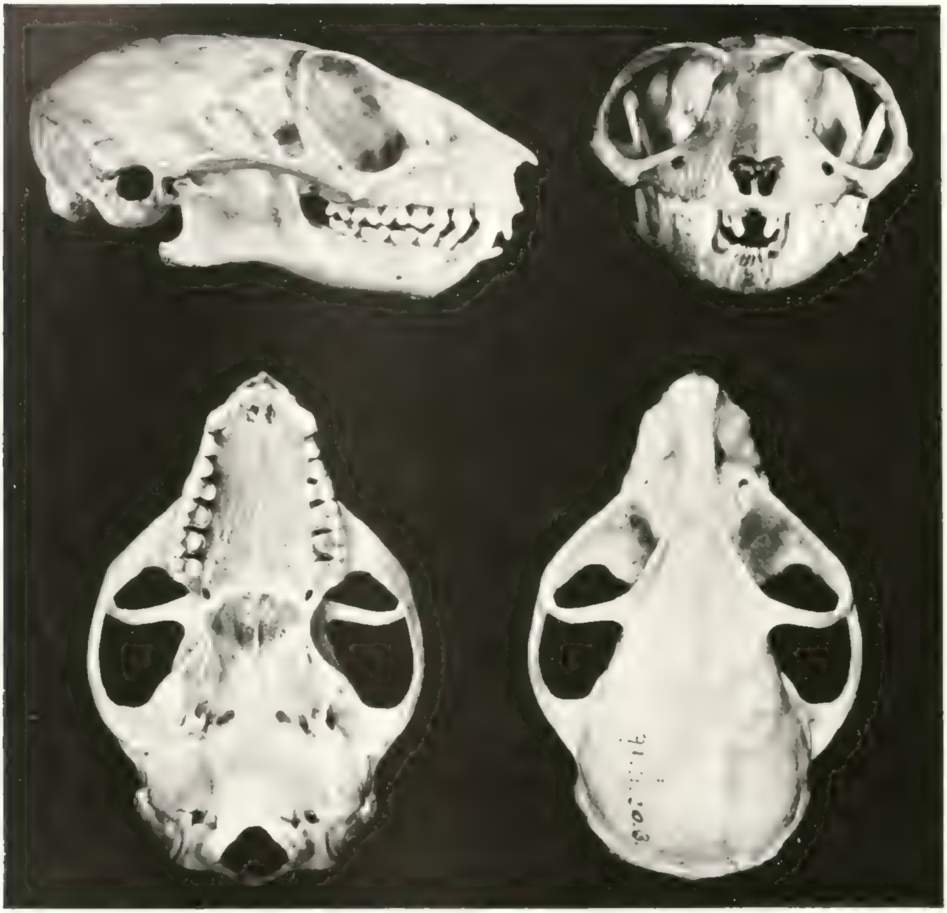
Measurements. Total length, 635; tail, 335. Skull: total length, 60; occipito-nasal length, 58; zygomatic width, 34; intertemporal width, 25; length of nasals, 15; length of lower molar series, 19.5. Ex type Berlin Museum.

A Lemur-like animal about the size of MYOXICEBUS GRISEUS with a long thick tail. The skull has a broad and heavy rostral region, two very small upper incisors, the molars with three cusps, two outer and one inner; the second upper premolars with a small inner cusp. The exact locality where this animal was found is not given by Peters who only states it came from Madagascar. The type is unique.



MIXOCEBUS CANICEPS.

No. 4087 Berlin, Mus. C.E. Type. ⅓ Larger than Nat. Size.



ALTILILEMUR THOMASI.

No. 91.11.30.3 Brit. Mus. Coll. Larger than Nat. Size

GENUS *ALTILILEMUR. FAT-TAILED LEMURS.

$$\text{I. } \frac{2-2}{2-2};\quad \text{C. } \frac{1-1}{1-1};\quad \text{P. } \frac{3-3}{3-3};\quad \text{M. } \frac{3-3}{3-3} = 36.$$

Tail conical, thickened at base; rostrum exceedingly broad for its length, with long narrow nasals, rounded on tip; braincase long, wide posteriorly, with considerable intertemporal constriction; zygomatic arches wide; orbits large; palate very broad posteriorly; molars rather large with three cusps, two outer and one inner; first and second premolar canine-like in both jaws; the first lower premolar much larger than the others; the third shortest with one low interior cusp.

The species included here in this genus have been usually placed in *Opolemur* Gray, which had for its type and only species CHEIROGALEUS (!) MAJOR E. Geoffroy. There was, indeed, at the time Gray instituted his genus another described species, C. CROSSLEYI Grandidier, which should have been included, but it was evidently unknown to Gray, as he makes no mention of it, and for him Opolemur (!) was a monotypical genus. Unfortunately for the scientific standing of Gray's genus, E. Geoffroy had proposed in 1812 for his *milii,* previously named MAJOR, the genus CHEIROGALEUS (!) and this fact was perfectly well known to Gray, who gives *Cheirogaleus* (!) *milii* Geoff., as one of the species in his Catalogue of Monkeys, Lemurs, etc., p. 77. In establishing the genus *Opolemur* (!), Gray, as was frequently customary with him, ignored the writings of previous authors, and here adopted for his type a species already the type of another described genus. This procedure deprives *Opolemur* (!) of all scientific standing, and reduces the term to a pure synonym of CHEIROGALEUS (!) Geoff., and its farther employment as a generic name is prohibited. This leaves the two species *C. samati* = A. MEDIUS, and C. THOMASI without a genus, and I propose therefore for them the generic term ALTILILEMUR, with A. MEDIUS (E. Geoff.), as its type.

Only two species of ALTILILEMUR are known; the type just named, and THOMASI Major, both heretofore placed in *Opolemur* (!), although that term was applied to species possessing different generic characters from those exhibited by the forms now placed under the newly created name.

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*Altilis. Fatted or Fattening, alluding to the often enlarged base of tail.

LITERATURE OF THE SPECIES.

1812. *E. Geoffroy St. Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*
A drawing by Commerçon was reproduced in this publication and given the name CHEIROGALEUS (!) MEDIUS. A specimen in the Paris Museum was identified by Grandidier as Geoffroy's species, and its locality given as Bourbon, Madagascar.

1868. *Grandidier, in Revue et Magazin de Zoologie.*
ALTILILEMUR MEDIUS (Geoff.), redescribed as *C. samati,* and by this latter name the species is universally known.

1894. *Forsyth Major, in Novitates Zoologicæ.*
ALTILILEMUR THOMASI is described for the first time as *Opolemur* (!) *thomasi.*

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

The two known species of ALTILILEMUR are both natives of Madagascar. They are fairly large animals with tails nearly as long as the head and body. The base of the tail becomes very large by laying on of fat before the creatures hibernate, and it is on this they subsist during the period they remain in a dormant condition. Their range on the Island of Madagascar, so far as known, is very restricted, A. MEDIUS having been found only at Bourbon on the west coast, and A. THOMASI at Fort Dauphin on the south east coast. Both species are rare in collections.

KEY TO THE SPECIES.

A. Black ring around eyes separated by a white stripe.
  a. Tail above dark gray washed with ferruginous....*A. medius.*
  b. Tail above pale rufous or rusty................*A. thomasi.*

ALTILILEMUR MEDIUS (E. Geoffroy).

Cheirogaleus (!) *medius* E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 172, pl. X, fig. 2; Mivart, Proc. Zool. Soc. Lond., 1873, p. 492.

Chirogaleus (!) *samati* Grand., Rev. Mag. Zool., 1868, p. 49; Mivart, Proc. Zool. Soc. Lond., 1873, p. 492.

Opolemur (!) *samati* F. Major, Novit. Zool., I, 1894, p. 18; Forbes, Handb. Primates, I, 1894, p. 62.

Microcebus samati Kollm., Bull. Mus. Nat. Hist. Nat., Paris, 1910, No. 6, p. 302.

SAMAT'S FAT-TAILED LEMUR.

Type locality. Bourbon, west coast of Madagascar. Type in Paris Museum?

Genl. Char. Size small, tail long, thick at base; fur thick, woolly; nose short, broad.

Color. Above dark gray washed with ferruginous, hair tipped with silver gray; a circle around the eyes, extending on to sides of nose blackish brown; between eyes white; cheeks, chin, throat and under surface of body, and inner side of limbs yellowish white, in some examples fulvous; tail above like back, beneath yellowish white. Ex type? *C. samati* in Paris Museum.

Measurements. Total length about 352; tail, 161; foot, 36. Skull: occipito-nasal length, 42; Hensel, 34; zygomatic width, 27; intertemporal width, 12; palatal length, 15; width of braincase, 21; nasals, 13; length of upper tooth row with canines, 19; length of mandible, 25; length of molar series, 12. Ex British Museum Specimen, Morondava, Madagascar.

The cheeks and under parts of the type have faded almost to a white, but the upper parts retain most of their original color. The ticket on the specimen states that the species is the "*Chirogaleus medius* (Geoff.), *C. samati* (Grand.), Type," from which I infer it is Grandidier's type and not Geoffroy's. The example was procured by Grandidier at Bourbon, West coast of Madagascar. Mivart states, (l. c.) that Prof. A. Milne-Edwards informed him that *C. samati* Grandid., was the same as C. MEDIUS E. Geoffroy.

E. Geoffroy's type of C. MEDIUS, if the one above mentioned is not it, is not in the collection of the Paris Museum.

ALTILILEMUR THOMASI Major.

Opolemur (!) *thomasi* F. Major, Novit. Zool., I, 1894, p. 20, pl. I, fig. 1, pl. II, fig. 2; Forbes, Handb. Primates, I, 1894, p. 63.

THOMAS' FAT-TAILED LEMUR.

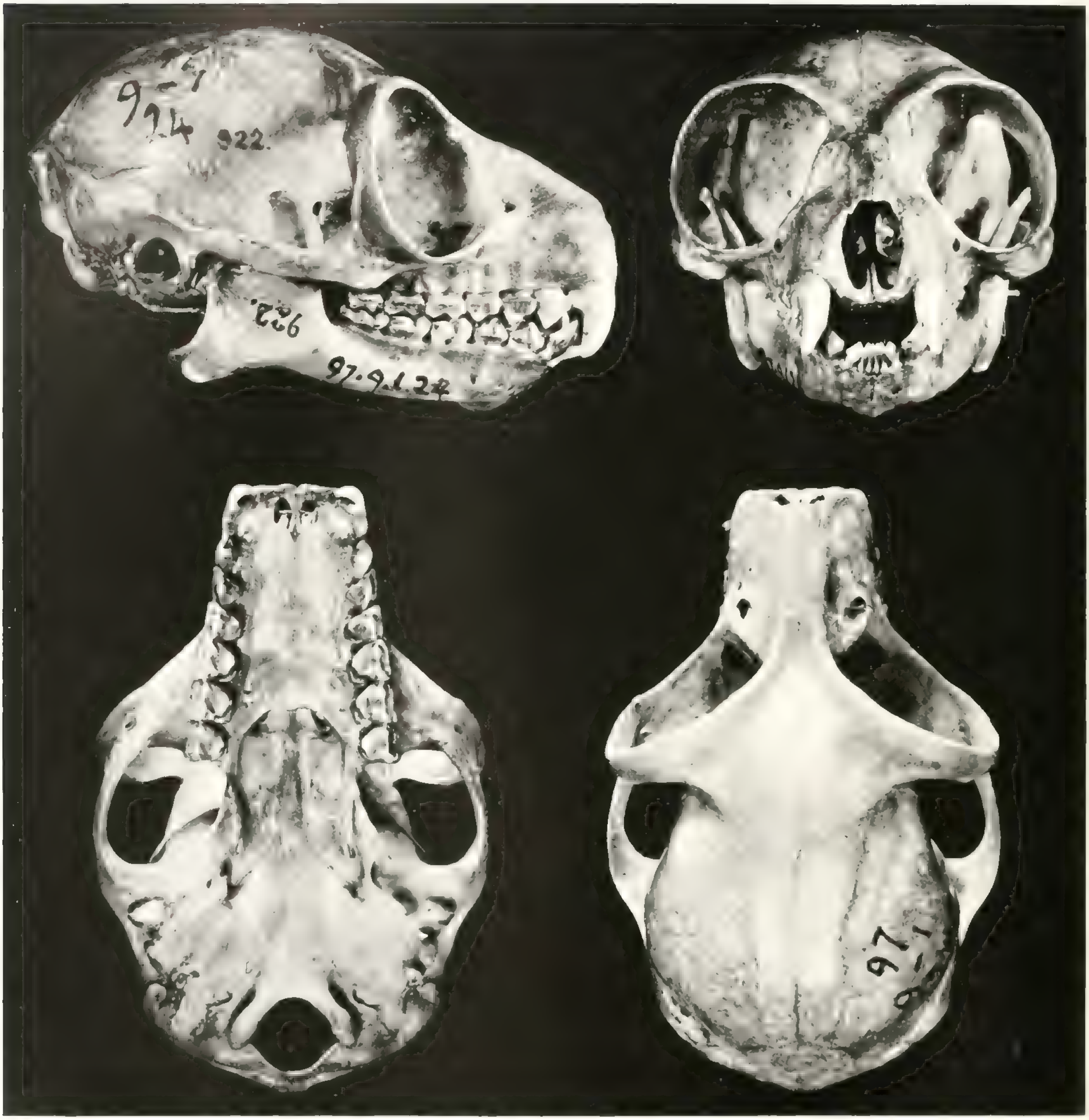
Type locality. Fort Dauphin, south east coast of Madagascar. Type in British Museum.

Geogr. Distr. Known only from type locality.

Genl. Char. Similar to A. MEDIUS; posterior upper premolar broader than the second and larger than in A. MEDIUS; middle premolar without inner cusp; nasals keeled on middle line.

Color. Head and upper parts of body brownish gray, hairs tipped with silver gray, top of head darkest; semi-white ring around the neck; white stripe between eyes reaching to nose pad; black ring around eyes; chin, throat and entire under parts, and inner side of limbs, yellowish white; hands and feet grayish white; tail above pale rufous, beneath gray washed with rusty. Ex type British Museum.

Measurements. Total length, 427; tail, 217; foot, 35. Skull: occipito-nasal length, 43; Hensel, 36; zygomatic width, 29; intertemporal width, 12.5; palatal length, 17; breadth of braincase, 20; median length of nasals, 14; length of upper molar series, 12; length of mandible, 28; length of lower molar series, 13. Ex type British Museum.


97-9-1-24
922
922
97.9.1.24
97
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LEPIDOLEMUR MUSTELINUS.

No. 97.9.1.24. Brit. Mus. Coll. Larger than Nat. Size.

GENUS LEPIDOLEMUR. SPORTIVE LEMURS.

$$\text{I. } \tfrac{0-0}{2-2};\quad \text{C. } \tfrac{1-1}{1-1};\quad \text{P. } \tfrac{3-3}{3-3};\quad \text{M. } \tfrac{3-3}{3-3} = 32.$$

LEPILEMUR (sic.), I. Geoff., Cat. Meth. Mamm. Mus. Hist. Nat. Paris, 1re Part., 1851, p. 75. Primates. Type *Lepilemur* (!) *mustelinus* I. Geoffroy.

Lepidolemur Peters, Monatsb. K. Preuss. Akad. Wiss. Berlin, 1874, p. 690.

Galeocebus Wagn., Schreb., Säugth. Suppl., V, 1855, pp. XII, 147.

Smaller in size than the true Lemurs (genus *Lemur*); head conical; ears large, round, hairless; tail shorter than body; fourth finger and fourth toe longest; nails keeled, that of the great toe large and flat. Skull: nose long; no upper incisors as a rule; canines large with a posterior heel, and internal groove; no diastema between canine and first premolar; the latter tooth has one exterior cusp only; the next two molars have both an interior and exterior cusp; the last molar has three cusps; all the molars have a rudimentary hind cusp largest in last molar; lower first premolar large, resembling canines, with a process on anterior margin; last molar with one exterior cusp; the median molar with one external and one internal cusp. Palate extending to middle of last molar. Mastoids much enlarged and swollen. Sagittal ridge present. Space between orbits, and in front of lacrymal foramen, depressed. Feet only slightly elongate. No *os centrale* in wrist.

This genus was instituted by I. Geoffroy (l. c.) for the reception of his L. MUSTELINUS, at that time the only species belonging to it that was known. Since then others have been discovered and seven are now recognized. LEPIDOLEMUR has been thoroughly investigated by St. George Mivart in his excellent paper on the LEMURIDÆ and its characters plainly given; and he failed to find that its affinities had any marked relationship with any other genus, although it approximates to *Hapalolemur* = MYOXICEBUS, more nearly than to any other. The teeth are peculiar and recall those of INDRIS. They are arranged in nearly parallel lines, and there are no incisors in the upper jaw. The first lower premolars are large, similar to canines in shape with one external cusp, and the last lower molar has a large fifth cusp. The angle of the mandible is produced downwards as well as backwards. The navicular bone is long and the foot thereby lengthened.

The species, like all those of the LEMURIDÆ, are nocturnal and live in trees, and are agile in their movements. But little is known of their habits, and certain of the species are represented by the unique types in Museums only. The genus is divided into two groups arranged according to size e. g. large or small, the first containing three species, the latter four. When a number of examples have been assembled together, much variation in color is seen to exist among the older forms, but whether an equal diversity will be found on the species more recently described it is impossible to state at present. All the species thus far discovered are natives of Madagascar.

LITERATURE OF THE SPECIES.

1851. *I. Geoffroy Saint Hilaire, Catalogue des Primates. Première Partie Mammifères.*
LEPIDOLEMUR MUSTELINUS, genus and species described.

1867. *Grandidier, in Revue et Magasin de Zoologie.*
LEPIDOLEMUR RUFICAUDATUS first described.

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in the British Museum.*
LEPIDOLEMUR MUSTELINUS redescribed as *L. dorsalis.*

1894. *Forsyth-Major, in Forbes Handbook of Primates.*
Four species are here described for the first time, viz., L. MICRODON, L. EDWARDSI, L. GLOBICEPS and L. GRANDIDIERI.

1894. *Forsyth-Major, in Annals and Magazine of Natural History.*
LEPIDOLEMUR LEUCOPUS described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

On the eastern coast of Madagascar L. MUSTELINUS is found from Mt. Ambre in the north to Fort Dauphin in the south; and in the eastern districts of Betsileo Province, Central Madagascar, L. MICRODON is met with. At Fort Dauphin in the southeastern part of the island, L. LEUCOPUS was obtained. Passing to the opposite side of Madagascar at Betseko on the northwestern part L. EDWARDSI was procured; and somewhere in this part, locality not given by its discoverer, L. GRANDIDIERI comes; in the southwestern part from Marinda to Masikora, L. RUFICAUDATA ranges, and in the same section at Ambulicata, L. GLOBICEPS is found. It will be seen that several of the species are limited to one locality, and this is on account of the limited number of examples procured, as all the species obtained by Forsyth-Major save one, L. MICRODON, were represented by only one specimen. The distribution of these, therefore, is still to be ascertained.

KEY TO THE SPECIES.

- A. Size small.
  - *a.* Feet not white.
    - *a.'* "Tail drab color" .... *L. globiceps.*
    - *b.'* "General color cinnamon" .... *L. grandidieri.*
  - *b.* Feet white .... *L. leucopus.*
- B. Size large.
  - *a.* Upper parts chestnut or grayish red.
    - *a.'* Without stripe on side of neck........... *L. mustelinus.*
    - *b.'* With stripe on side of neck .... *L. microdon.*
  - *b.* Upper parts reddish brown or reddish gray.
    - *a.'* No dorsal line .... *L. ruficaudatus.*
    - *b.'* Dorsal line conspicuous from forehead...... *L. edwardsi.*

Not having seen a specimen of either L. GLOBICEPS or L. GRANDIDIERI, I am obliged to take such distinctive characters as I could find in the brief and unsatisfactory descriptions given of these species by Forbes, (l. c.).

LEPIDOLEMUR GLOBICEPS Major.

Lepidolemur globiceps Forsyth-Major, in Forbes Handbook of Primates, I, 1894, p. 89.

"Char. The smallest of the Sportive Lemurs. Similar to LEPIDOLEMUR RUFICAUDATUS, but less rufous down the fore limbs; the tail drab color."

"Skull very characteristic; the braincase broad, high, and globose, the facial region short; the premaxillæ more reduced than in any other species; the external auditory channel very large; the occipital region less vertical than in the species of Section A. Distribution, Ambulisatra, southwest Madagascar."

I have not seen this species, as the type, the only known example, could not be found in the British Museum. The extract quoted above is all that is known of the animal.

Lepidolemur grandidieri Major.

Lepidolemur grandidieri F. Major, in Forbes Handb. Primates, I, 1894, p. 89; *Id.* Proc. Zool. Soc. Lond., 1901, p. 259, fig. 67.

Lepilemur (!) ***mustelinus*** Gray, Proc. Zool. Soc. Lond., 1863, p. 144, (nec I. Geoff.).

GRANDIDIER'S SPORTIVE LEMUR.

Type locality. North west Madagascar, locality not given.

Type not in British Museum.

Geogr. Dist. North west Madagascar.

Genl. Char. "Skull remarkable for the large size of its orbits, and for the anterior convergence of its upper dental cheek-series being greater than in the other members of the group."

Color. "General color cinnamon; head grayish; an indistinct median dorsal streak from the forehead along the back; inner side of the limbs and under side of the body yellowish gray." Ex Forbes (l. c.).

Measurements. Skull: occipito-nasal length, 49; Hensel, 42; zygomatic width, 32; intertemporal width, 19; palatal length, 19; breadth of braincase, 24; median length of nasals, 11; width of palate between last molar, 10; length of mandible, 35; length of lower tooth row, 20; length of upper tooth row, 19. Ex type British Museum.

I have not seen this species as the unique type could not be found in the British Museum. The skull however was in the collection and the measurements were taken from it.

Lepidolemur leucopus Major.

Lepidolemur leucopus F. Major, Ann. Mag. Nat. Hist., XIII, 1894, p. 211; Forbes, Handb. Primates, I, 1894, p. 89, pl. IX.

WHITE-FOOTED SPORTIVE LEMUR.

Type locality. Fort Dauphin, south east Madagascar. Type in British Museum.

Geogr. Distr. Southeastern Madagascar. Type locality only.

Genl. Char. Ears large; tail shorter than the body. Skull long and broad; mastoid region greatly inflated; palate long; tooth row short; molars small, slender.

Color. Male. Nose pale gray; head iron gray with a dark brown median stripe; neck, shoulders, and outer side of arms pale rufous; upper rump pale cream buff; rest of upper parts and outer side of legs chinchilla gray; a dark brown stripe from neck to rump; spot under the ear rufous, cheeks gray tinged with rufous; chin white; rest of under parts and inner side of limbs yellowish white; hands rufous gray; feet white; tail rusty gray above and below. Ex type British Museum.

Measurements. Total length, about 540; tail, 265; foot, 57. Skull: occipito-nasal length, 50; Hensel, 40; zygomatic width, 35; intertemporal width, 19; palatal length, 18; width of braincase, 25.5; median length of nasals, 11; length of upper molar series, 12; length of mandible, 34; length of lower molar series, 18.

A rather easily distinguished species and one of the prettiest of the group, its chinchilla coloring and white feet making it quite conspicuous among its more somber-hued relatives.

LEPIDOLEMUR MUSTELINUS I. Geoffroy.

Lepilemur (!) *mustelinus* I. Geoff., Cat. Primates, 1851, p. 76; Gray, Proc. Zool. Soc. Lond., 1863, p. 244; Mivart, Proc. Zool. Soc. Lond., 1864, pp. 623-642; 1867, p. 971; 1873, pp. 489, 490, figs. 7, 8; Schleg. and Pollen, Faun. Madag. Mamm., 1868, p. 10, pls. IV, VI, fig. 3; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, pp. 88, 135; *Id.* Proc. Zool. Soc. Lond., 1872, p. 851; Mivart, Proc. Zool. Soc. Lond., 1873, pp. 486-490, figs. 1-8; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 317; Barth., Proc. Zool. Soc. Lond., 1879, p. 768; von Bardeleb., Proc. Zool. Soc. Lond., 1894, p. 86.

Galeocebus mustelinus Fitzing., Sitzungsb. Metth. Naturw. Akad. Wissensch. Wien, 1870, p. 664.

Lepilemur (!) *dorsalis* Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 135.

Hapalemur (*Lepilemur*!) *dorsalis* Trouess., Cat. Mamm., p. 136.

Lepidolemur mustelinus Forbes, Handb. Primates, I, 1894, p. 86; F. Major, Proc. Zool. Soc. Lond., 1901, pp. 257, 258, figs. 63, 64, 65; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 347, Zool. Ser.

WEASEL LEMUR. Native name "Fitiliki."

Type locality. Madagascar. Type in Paris Museum.

Geogr. Distr. Entire length of east coast of Madagascar from Fort Dauphin to Mt. Ambre.

Genl. Char. Fur woolly; ears rounded, haired only at base externally; hairs of tail short; dorsal stripe on type very indistinct. Skull large, heavy; braincase small, rounded; facial region long; orbits very large; os planum distinct; molars large; anterior upper premolar not like a canine; last lower molar with large fifth cusp; anterior portion of each molar produced forwards, overlapping posterior portion of teeth in front; posterior margin of palate level with anterior edge of last upper molar; premolars with one external cusp; fourth digit longest; tail more than half the total length.

Color. Top of head dark brown, hairs tipped with grayish white; lower sides of neck above shoulders dark rufous; entire upper part reddish, becoming paler on rump, but brighter on flanks; dorsal stripe from neck to middle of back very indistinct on lower back; outer side of arms like back; legs paler and duller; chin and throat white; under parts buffy; inner side of limbs mouse gray; tail at base like back, middle portion sooty, apical portion reddish brown. Ex type in Paris Museum.

The L. DORSALIS Gray, is the same as L. MUSTELINUS. The type is in the collection of the British Museum, and may be described as follows. Top and back of head grizzled grayish brown with an indistinct dark brown stripe in the middle of the crown; upper part of body reddish brown; on the lower back the tips of the hairs have all been worn away leaving only the blue under fur visible; shoulders and outer side of limbs like the back; under part of body and inner side of limbs grayish fulvous, the plumbeous under fur showing through in many places; hands reddish brown, feet paler brown; tail above bluish gray on basal half, (tips of hairs worn away), pale rufous on apical half, beneath pale rufous. This type specimen is slightly smaller than Geoffroy's type, and its tail a little longer, but the color of the upper parts and texture of the fur is very like L. MUSTELINUS. The skull of the type of *L. dorsalis* had been mislaid and I did not see it.

Another specimen in the British Museum attributed to *L. dorsalis* has lost nearly all the reddish tips of the hairs, and is nearly a plumbeous color, but gray on head and between the shoulders, while a brown stripe extends from the forehead to the middle of the back. Gray states there is no dorsal stripe, and his type has none, but in these animals the absence or presence of a dorsal stripe may be regarded more as an individual than an important specific character, as its depth and distinctness varies greatly among examples. The tail is somewhat darker. I am unable to discover any character by which these specimens can be separated from L. MUSTELINUS. The skull of this last individual measures as follows: occipito-nasal length, 49; Hensel, 40; zygomatic width, 35; intertemporal width, 18; palatal length, 17; width of braincase, 30; median length of nasals, (broken); length of upper molar series, 20; mandible wanting. A specimen in the Paris Museum is very red on back, and tail red on basal half, rest dark brown.

Another example is pale reddish brown on upper parts, the tail buff washed with reddish. There is great variation among individuals. Little is known of the habits of this species, but according to Schlegel and Pollen (l. c.) it resembles in these respects those of M. FURCIFER, and these two species are often seen together. It is very stupid and lazy, more so than M. GRISEUS, and the natives say they often kill it in the day time with sticks. It will eat flesh.

LEPIDOLEMUR MICRODON Major.

Lepidolemur microdon F. Major, in Forbes Handb. Primates, I, 1894, p. 88; von Bardeleb., Proc. Zool. Soc. Lond., 1894, p. 358; F. Major, Proc. Zool. Soc. Lond., 1899, p. 429, fig. 6; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 547, Zool. Ser.

SMALL-TOOTHED SPORTIVE LEMUR.

Type locality. Eastern district of Betsileo Province, Central Madagascar. Type in British Museum.

Geogr. Distr. Eastern district of Betsileo Province, Central Madagascar.

Genl. Char. Similar outwardly to L. MUSTELINUS, but molars very small; premolars of usual size; palate longer than that of the species compared.

Color. Male. Head, back, shoulders, outer side of arms, and front of thighs, chestnut; lower part of back at rump paler; blackish brown stripe from crown to middle of back; outer side of legs rufous; in one specimen this part is like the back; in most examples there is a narrow ochraceous stripe from the cheeks to back of neck, but this is only partly shown in the type; throat and fore neck dark gray; chest chestnut; under parts of body and inner side of limbs yellowish gray. The type has lost the tip of the tail, the portion remaining is russet; but the entire tail taken from other specimens has the basal half chestnut and the remaining portion blackish brown. The type is not in as richly colored pelage as are specimens procured by Dr. Forsyth-Major. It was obtained by W. D. Cowan in the Ankapana Forest, Eastern Betsileo, Madagascar.

Measurements. Size about equal to L. MUSTELINUS. Skull: occipito-nasal length, 58; Hensel, 49; zygomatic width, 38; intertemporal breadth, 21; palatal length, 22; median length of nasals, 19; width of braincase, 29; length of upper molar series, 21; length of mandible, 40; length of lower molar series, 22. Ex type British Museum. The teeth are remarkable for the small size of the molars, hence the name.

LEPIDOLEMUR RUFICAUDATUS Grandidier.

Lepilemur (!) *ruficaudatus* Grandid., Rev. Mag. Zool., 1867, p. 256; Mivart, Proc. Zool. Soc. Lond., 1867, p. 971; Gray, Proc. Zool. Soc. Lond., 1872, pp. 851, 855; Forbes, Primates, I, 1894, p. 87.

Lepilemur (!) *pallidicauda* Gray, Proc. Zool. Soc. Lond., 1872, p. 850.

RED-TAILED SPORTIVE LEMUR.

Type locality. Morondava, Madagascar.

Geogr. Distr. South western Madagascar from Marinda to Masikora. Type in Paris Museum.

Genl. Char. Smaller than L. MUSTELINUS; nasal region short; ears ovate, haired; tail long; orbits small. Skull massive, broad for its length, muzzle short.

Color. Head dark grayish brown; upper parts of body pale reddish gray; shoulders and outer side of arms reddish brown; outer side of hind limbs, pale gray washed with brown on outer edge of thigh above the knee; chin and breast gray; rest of under parts, and inner side of limbs whitish or yellowish white; hands reddish brown, feet paler brown, toes whitish; tail reddish brown darker than the rump; apical part of ears naked, black, remainder hairy like head; dorsal line indistinctly reddish.

Measurements. Total length about 560; tail, 280. Skull: occipito-nasal length, 55; Hensel, 42; zygomatic width, 38; intertemporal width, 19; median length of nasals, 14; length of upper molar series, 21; length of mandible, 41; length of lower molar series, 21.

There are several mounted specimens of this form in the Paris Museum, all of which, according to the regrettable custom prevailing in that Institution are marked as "types." Some are greatly faded and show but little of the original coloring, and which one is the real type it is impossible to say. The one described was procured by Grandidier at Morondava, Madagascar, in 1869, and is of course not the true type, but a co-type. The probably real type taken at the same place in 1867 is so faded that but a faint idea of its original coloring can be obtained. The chief difference between this form and L. MUSTELINUS is in the shape and proportion of the skull. Three or four skins, however, in the collection in the drawers, still retain the original coloring.

Lepilemur (!) *pallidicauda* Gray, is the same as L. RUFICAUDATUS. Why Gray should have described it as distinct is difficult to imagine for he states, (l. c.) that, "this animal was sent to us by Mr. Frank of Amsterdam as LEPILEMUR (!) RUFICAUDATUS Grandidier," and then he gives Grandidier's short description. Surely there was no reason to confer upon the hapless animal a new name. Gray's description of the male is short and he gives none of the female, merely making a slight reference to the color of the tail. The following description is taken from this female. Head gray, hairs tipped with black; back grayish washed with brown; a reddish brown (not very distinct), stripe on middle of back; rump buff or pale fawn; shoulders and arms reddish brown; outer side of legs pale gray; entire under parts and inner side of limbs yellowish white; hands rufous, feet gray; tail above dark brown, beneath basal half yellowish white, remainder pale cinnamon.

Measurements of the male's skull are as follows. Occipito-nasal length, 56; Hensel, 45; zygomatic width, 37; intertemporal width, 17; palatal length, 21; width of braincase, 27; median length of nasals, 14; length of upper molar series, 21; length of mandible, 41; length of lower molar series, 23.

It will be seen that there is very little difference in the measurements between this skull and that of the male given above.

LEPIDOLEMUR EDWARDSI Major.

Lepidolemur edwardsi F. Major, Forbes, Handb. Primates, I, 1894, p. 87.

MILNE-EDWARDS' SPORTIVE LEMUR.

Type locality. Betseko, north west Madagascar. Type in British Museum.

Geogr. Distr. Northwestern Madagascar.

Genl. Char. Skull long, narrow; orbits small; mastoid region inflated; molars and premolars large.

Color. Head above, and upper part of neck gray, hairs tipped with reddish; nose reddish; dark brown stripe behind ears; back grayish brown, with a reddish brown patch in the center of the back; dark brown streak from center of forehead to middle of back; shoulders and outer side of arms reddish brown; outer side of legs gray washed with brown; lower sides of neck, chin, throat, under parts of body and inner side of limbs grayish white; hands reddish, feet gray; tail cinnamon. Ex type British Museum.

Measurements. Total length about 660; tail, 300. Skull: occipito-nasal length, 55; Hensel, 49; zygomatic breadth, 37; intertemporal width, 19; palatal length, 23; width of braincase, 25; median length of nasals, 15; length of upper molar series, 22; length of mandible, 41; length of lower molar series, 20. Ex type British Museum.

GENUS MYOXICEBUS. GENTLE LEMURS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{3-3}{3-3}; \quad \text{M. } \frac{3-3}{3-3} = 36.$$

MIOXICEBUS (!) Less., Spec. Mamm., 1840, p. *207*. Type *Lemur griseus* Geoffroy.

Hapalemur (!) I. Geoff., L'Instit., 19 Ann. No. 929, p. 341, footnote, 1851; *Id.* Cat. Primates, 1851, p. 74.

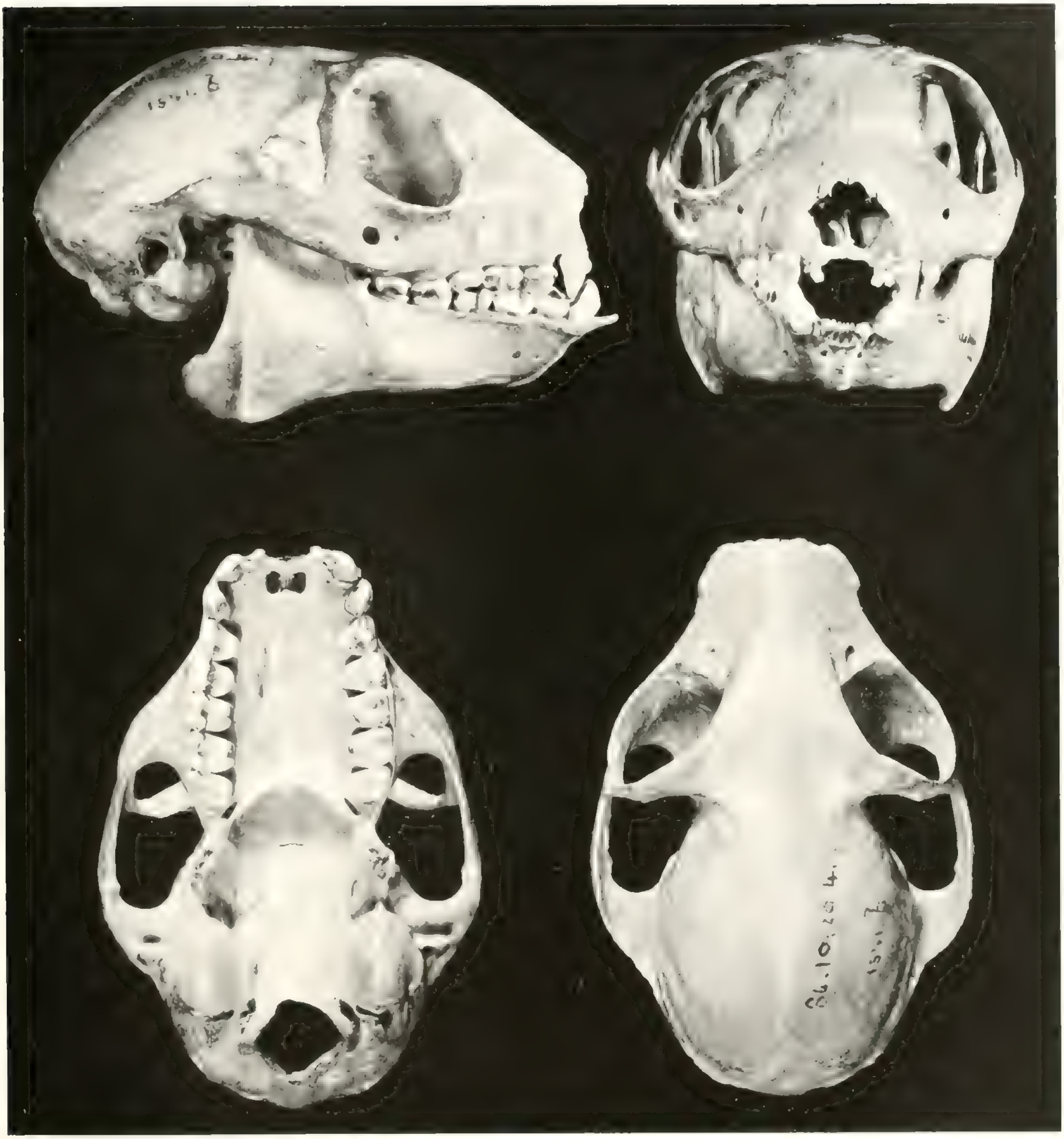
Prolemur. Gray, Proc. Zool. Soc. Lond., 1870, p. 828, pl. LII, figs. 1-4.

Head globose; muzzle short, tapering; ears short, hairy; hind limbs longer than fore limbs, feet short, broad; tail hairy, as long as body. Skull: facial portion short, narrow; nasal bones arched; premolar small; paroccipital processes small, distinct, laterally compressed, pointed; braincase rounded, without crests; palate reaching to middle of last molar; mastoid region not inflated; mandible with large angle produced downward, inward and backward. Upper incisors very small, subequal; canines small, with a narrow diastema between them and first premolar; this last tooth has but one cusp; the last premolar has one inner and two outer cusps united by a ridge; cingulum prominent externally, internally rudimentary; last upper molar tricuspidate. All these teeth are serrated. The molars have one inner and two outer cusps not connected by a ridge, with a cingulum having an external cusp. The first and second lower premolars are oblique, the second having one outer and one inner cusp; posterior premolar has three outer and two inner cusps, with transverse ridges between the inner and outer cusps. All these teeth except the molars are serrated like those in the upper jaw. Wrist without *os centrale.*

LITERATURE OF THE SPECIES.

1796. *E. Geoffroy St. Hilaire, in Magasin Encyclopédique.*
Myoxicebus griseus first described as *Lemur griseus;* and the same species redescribed as *Lemur cinereus.*

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*
The genus Myoxicebus was instituted here, and two species placed in it, which were, however, not co-generic. Lemur



MYOXICEBUS SIMUS.

No. 84.10.24.4. Brit. Mus. Coll. Nat. Size.

GRISEUS E. Geoff., which is the type, and HEMIGALAGO DEMIDOFFI.

1851. *I. Geoffroy St. Hilaire, Catalogue Méthodique de la Collection des Mammifères.*
In this publication a list is given of the species and examples contained in the Paris Natural History Museum. M. GRISEUS is removed from the genus LEMUR and placed in that of *Hapalemur* (!) here originally instituted, the writer either having been ignorant of Lesson's genus MYOXICEBUS or having disregarded it. A new species is first described M. OLIVACEUS as *Hapalemur* (!) *olivaceus.*

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in the Collection of the British Museum.*
MYOXICEBUS SIMUS first described as *Hapalemur* (!) SIMUS.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

On the eastern coast of Madagascar from the Bay of Antongil to and including Betsileo Province, M. SIMUS has its range; while in the same Province is found M. GRISEUS which also appears in the north west part of the island to Ifassy. The known locality for M. OLIVACEUS, so far as I have been able to discover is Ampazenanbe, where an example was procured by M. Lentz, and which is now in the Paris Museum.

KEY TO THE SPECIES.

A. Rostrum long, slender.
  a. General color dark ochraceous ....*M. griseus.*
  b. General color olive brown tinged with reddish..*M. olivaceus.*
B. Rostrum broad, truncate ....*M. simus.*

MYOXICEBUS GRISEUS (E. Geoffroy St. Hilaire).

Lemur griseus E. Geoff., Mag. Encyclop., 1796, p. 48; Audeb., Hist. Nat. Singes et Makis, 1797, p. 18, pl. VII; Shaw, Genl. Zool., 1800, p. 113; Fisch., Anat. Maki, 1804, p. 24; Less., Man. Mamm., 1827, p. 68; *Id.* Spec. Mamm., 1840, p. 218; van d. Hoev., Tijdsch., Natur. Geschied., 1844, p. 383.
Lemur cinereus E. Geoff., Mag. Encyclop., 1796, p. 48.
Mioxicebus (!) *griseus* Less., Spec. Mamm., 1840, p. 218.
Hapalemur (!) *griseus* I. Geoff., Cat. Primates, 1851, p. 74; Gray,

Proc. Zool. Soc. Lond., 1863, p. 142; 1872, p. 851; Mivart, Proc. Zool. Soc. Lond., 1864, p. 613; Schleg. and Pollen, Faun. Madag., 1868, p. 611, pls. III, VII, fig. 4a, *(Skull); Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 361; Jent., Notes Leyd. Mus., VII, 1885, p. 33, pls. I-II; Bedd., Proc. Zool. Soc. Lond., 1884, pp. 391-394, 396, 399; 1887, p. 369, fig.; A. Milne-Edw. and Grandid., Hist. Nat. Madag., Atl., II, 1890, pl. XXIID, fig. 2; Forbes, Handb. Primates, I, 1894, p. 81.

Microcebus griseus Schinz, Syn. Mamm., I, 1844, p. 107.

Hapalolemur griseus Sclat., Proc. Zool. Soc. Lond., 1863, p. 161; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 652; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 547, fig. LXXVII, Zool. Ser.

GRAY GENTLE LEMUR. Native name ***Bokomboula.*** (Schleg. and Pollen).

Type locality. Madagascar. No locality given. Type in Paris Museum.

Geogr. Distr. Eastern side of Betsileo Province, and northwest side to Ifassy, Madagascar.

Genl. Char. Teeth serrated; broad pad beneath great toes; spines on forearm above wrist.

Color. Nose covered with white hairs; spot over eyes grayish; top of head, neck, upper part of body, and outer side of limbs dark ochraceous, the hairs black tipped; sides of head wood brown or drab; throat and chest grayish white with a reddish tinge; rest of under parts dark orange buff; hands and feet blackish brown; tail dark grayish brown, the hairs being yellowish at base, then black, the basal coloring showing through.

Measurements. Total length, 730; tail, 365. Skull: occipito-nasal length, 58; Hensel, 47; intertemporal width, 19; zygomatic width, 34; median length of nasals, 110; palatal length, 21; width of braincase, 27; length of upper molar series, 22; length of mandible, 39; length of lower molar series, 19. Ex specimen in Berlin Museum from Vohemar, Madagascar.

The type in the Paris Museum is so faded from exposure to the light for more than a century that the original color has disappeared, and a description of the specimen would be useless.

In their account of this species Schlegel and Pollen say, by the natives in the northwest part of Madagascar it is known by the name of *Bokomboula,* and it inhabits the forests of bamboo. They found it several journeys from the coast on the banks of the river Ambassuana. This animal remains during the day asleep among the shoots of the highest bamboos, the back curved, the head placed between the thighs, and the tail covering the back. It is strictly nocturnal in its habits, and does not perceive its enemies nor know of the hunter's approach. It feeds on the bamboo leaves, which were always found filling the stomach. It is very lazy during the day, but at night exhibits an activity and agility that is incredible. It utters a feeble grunt similar to that of a pig, but much less pronounced. The young are born in December or January. A young one kept in captivity lived on bananas and cooked rice, but it only ate the latter when forced by hunger. It had the bad habit of gnawing its tail as monkeys often do in captivity. On pointing a finger at it, it flew into a rage, showed its teeth and uttered sharp grunts.

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*This figure is badly drawn, or does not represent the skull of M. GRISEUS. It is altogether too broad, especially the muzzle. See Jentink, (l. c.).

MYOXICEBUS OLIVACEUS (I. Geoffroy).

Hapalemur (!) *olivaceus* I. Geoff., Cat. Primates, 1851, p. 75; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 133; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wissensch. Wien, 1870, p. 654; Bartl., Proc. Zool. Soc. Lond., 1879, p. 768.

OLIVACEOUS LEMUR. Native name *Coaline,* (Bartlett).

Type locality. Ampazenambe, Madagascar. Type in Paris Museum.

Geogr. Distr. Eastern coast of Madagascar from Betsileo Province, and north western parts to Ifassy.

Genl. Char. General color olive brown, under parts dark.

Color. Top of head, upper parts of body and outer side of limbs of arms grayish brown; rest of under parts pale fulvous; inner side of head behind ears and cheeks grayish; throat and chest, and inner side of arms grayish brown; rest of under parts pale fulvous; inner side of legs grayish tinged with fulvous; tail gray and black mixed, darkest on median portion; hands and feet blackish brown; ears hidden in fur. Ex type Paris Museum.

Measurements. Total length about 620; tail, 425. Skull: occipito-nasal length, 76.5; Hensel, 52; zygomatic width, 43.6; width of braincase, 32.5; palatal length, 36.7; median length of nasals, 13.4; length of upper molar series, 22.8; length of mandible, 55.2; length of lower molar series, 21. Ex specimen British Museum.

This animal seems separable from H. GRISEUS. It is much darker and of quite a different color on both the upper and under parts of the body. The type is in good preservation and has a young one by its side, showing the same coloration. It is not stated in what part of Madagascar it was procured, but a skin in the study collection obtained by M. Lentz is labelled as having been taken at Ampazenambe.

MYOXICEBUS SIMUS (Gray).

Hapalemur (!) *simus* Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus. 1870, p. 828, pl. LII, figs. 1-4, (skull); Mivart, Proc. Zool. Soc. Lond., 1873, p. 491, fig. 9; 501, fig. 14; Shaw, Proc. Zool. Soc. Lond., 1879, p. 132; Bartl., Proc. Zool. Soc. Lond., 1879, p. 768; 1884, p. 391; Schlegel, Notes Leyd. Mus., II, 1880, p. 45; Jentink, Notes Leyd. Mus., VII, 1885, p. 33, pl. I, figs. 1, 2, pl. II, figs. 1, 2; Bedd., Proc. Zool. Soc. Lond., 1884, p. 892; Forbes, Handb. Primates, I, 1894, p. 82.

Prolemur simus Gray, Proc. Zool. Soc. Lond., 1872, p. 851.

BROAD-NOSED GENTLE LEMUR.

Type locality. Madagascar. No locality given. Type in British Museum.

Geogr. Distr. North east coast of Madagascar. Antongil, (Jentink); Nandisu, Betsileo, (T. Waters. Ex Brit. Mus. spec.).

Genl. Char. Size large; nose broad, truncate; ears short, covered with long hairs externally, and on the margin; no spines above wrist.

Color. Nose black; top of head, and back and sides of neck rufous; cheeks, and beneath ears buff; lower part of back, sides of body, and outer side of limbs mouse color; yellowish spot on rump; throat, breast, and inner side of limbs pale ochraceous; under side of body yellowish white; hands, feet, and tail blackish gray. Ex type British Museum.

Measurements. Skull: occipito-nasal length, 81; Hensel, 63.6; zygomatic width, 65.5; palatal length, 33.2; width of braincase, 48.8; median length of nasals, 29.2; length of upper molar series, 31.3; length of mandible, 60.7; length of lower molar series, 39. Ex type British Museum.

This species has been confounded with M. GRISEUS (E. Geoff.), by various writers, and Gray himself thought it might be M. OLIVACEUS (I. Geoff.), though he maintained it was not the same as M. GRISEUS.

It is a much larger animal than that species, and the skulls if compared would show at once by their great dissimilarity of size, and shape of the muzzle, (one broad and one truncate, the other narrow and pointed), that they represent very distinct species.

There are two specimens in the Paris Museum, marked male and female and named M. SIMUS, collected by M. Lentz in the valley of Ambookobe, Madagascar, but which in color, do not resemble Gray's type of the species. Both examples have the very broad nose and muzzle of M. SIMUS. The following description was taken from the male specimen. Nose between eyes and on sides black; top of head, neck, and between shoulders, reddish chestnut, the hairs tipped with ochraceous; rest of back, sides of body, outer side of limbs and under parts yellowish gray, tinged with reddish on arms; throat and under side of arms below elbows rusty; hands reddish; feet yellowish gray; tail at base pale red, remainder brownish gray, blackish at tip; muzzle white; ears grayish on long hairs.

It will be seen that this specimen differs greatly in color from the description of the type of M. GRISEUS given above, and while both examples have characters that would seem to indicate they belonged to Gray's species, the various differences they exhibit in coloration would show that the form was subject to great diversity in its hues.

Mr. Shaw gives an account of one of these broad nosed Lemurs which he had in captivity (l. c.). It was caught in the higher level forest among the bamboos on the eastern side of Betsileo Province. The outwardly inclined teeth in the lower jaw were used as scrapers and not for biting. Besides these nearly all the teeth were serrated and arranged in opposition so as to intersect, and it could bite off easily the young shoots of the bamboo, and mince up a handful of grass blades and stalks, each bite cutting like a pair of scissors. It feeds nearly throughout the entire day, like most grass-eating animals, and for several months this Lemur was kept chained on the lawn, and it rarely ceased from eating the grass from morning until evening. It disliked fruit and could not be induced to touch it although tempted with various kinds growing in the forest, but was very fond of cooked meat and sugar cane; and through its desire for sugar it was induced to eat cooked rice, which eventually became its chief food. The broad pad on the great toes enabled it to grasp even the smoothest surface firmly. The male's head was round in shape, the female had a more pointed nose. The cry it uttered was at times like that of a duck, but on other occasions was loud and piercing.

GENUS LEMUR. TRUE LEMURS.

$$\text{I. } \frac{2-2}{3-3};\quad \text{C. } \frac{1-1}{0-0};\quad \text{P. } \frac{3-3}{3-3};\quad \text{M. } \frac{3-3}{3-3} = 36.$$

LEMUR Linn., Syst. Nat., I, 1758, p. 59; I, 1766, p. 44. Type *Lemur catta* Linnæus.

Prosimia Briss., Regn. Anim., 2nd ed., 1762, p. 156.

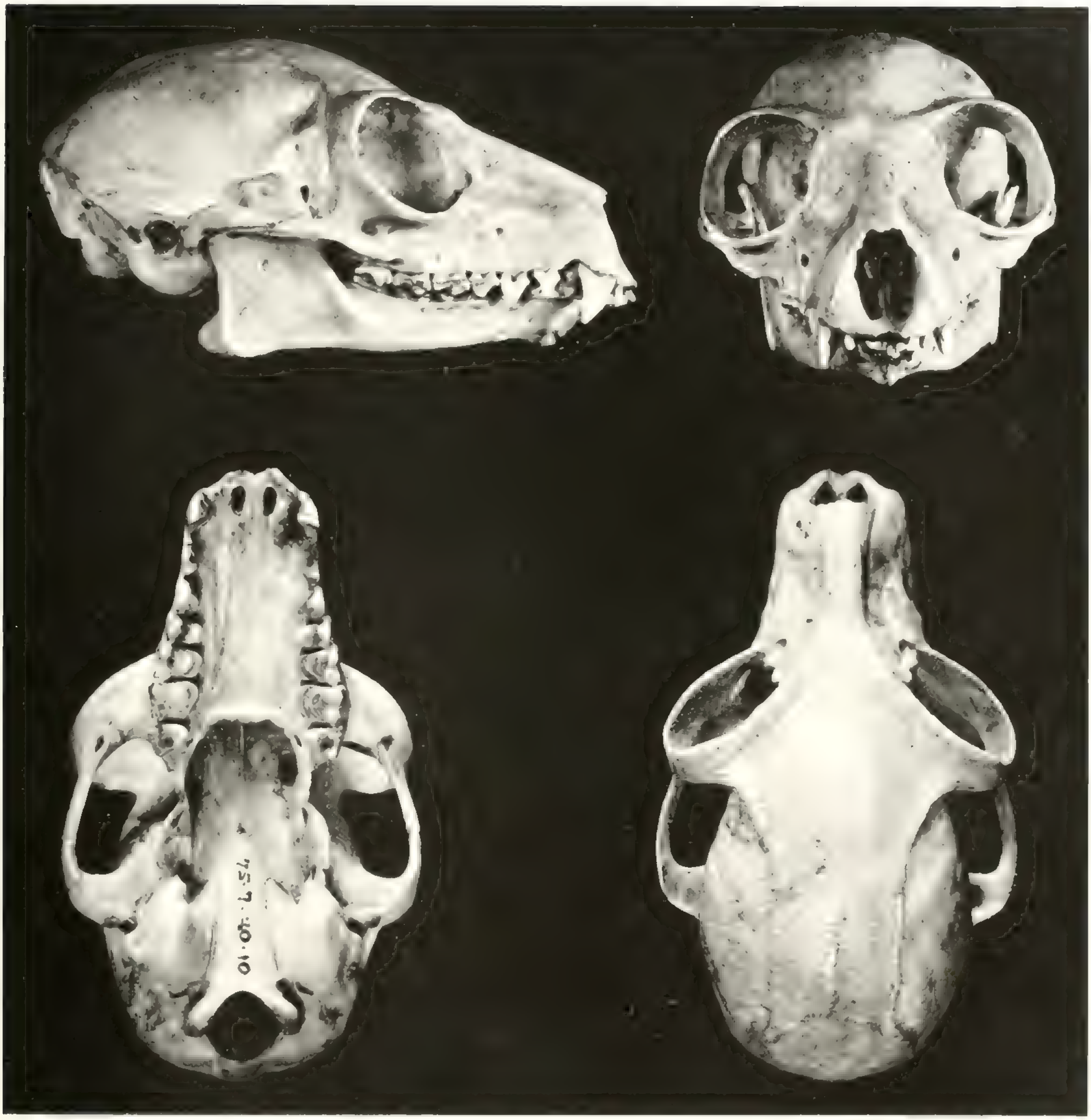
Procebus Storr, Prodr. Meth. Mamm., 1780, p. 32, tab. A.

Maki Muirhead, Brewst., Edinb. Encyclop., XIII, 1819, p. 405, (Part.).

Varecia Gray, Proc. Zool. Soc. Lond., 1863, p. 135.

Head fox-like; nose elongate; eyes large; superciliary ridges rising above forehead; ears large, tufted; chin and cheeks surrounded with long hair; arms shorter than legs; tail half as long as the body except L. CATTA; wrists and ankles hairy; outside of the palm of hand, and at base of fingers are fleshy pads; mammæ two, pectoral. Skull: facial portion elongate; mastoid region not inflated; incisors small, subequal, placed in front of canines, which are large and set in a notch on the jaw; all upper molars with an internal cingulum; upper premolars have one exterior cusp, with a supplementary one on the first, and the second premolar has a large interior cusp; the molars except the posterior, have seven cusps, two interior, two exterior, a small supplementary one in front, and two on the ridge between the exterior and anterior cusps; the posterior molar has only a front interior cusp. In the lower tooth row there is a diastema between the canines and the first premolars; these last are higher than the others and have a cutting edge; the lower molars except the last, have five cusps, two outer, two inner and an intermediate one, which is wanting on the last molar, leaving that tooth with but four. Angle of mandible not produced downward.

This genus contains the typical Lemurs, with an elongate face and a somewhat fox-shaped head; the cheeks are usually surrounded by a ruff of lengthened hairs, often passing beneath the chin. The ears are large with tufts on upper parts. Eyes large and round; the arms are not quite so long as the legs; and the tail is usually long, and sometimes inclined to be bushy. Fleshy pads are placed on palms of hands and muscles of the feet, as well as on under side of fingers, which



LEMUR CATTA.

No. 75.7.20.10. Brit. Mus. Coll. Nat. Size.

enable the animals to grasp the branch of a tree with great tenacity. In size they are about equal to the house cat, and their fur is thick, sometimes woolly in texture. Not very much is known of their habits in the wild state, but they are not so strictly nocturnal as the species of the other genera of the family, and are seen during the day as well as at night seeking food. They are only found in the Island of Madagascar and the adjacent Comorin Islands. They go in troupes, sometimes of many individuals, are very noisy and live in the forest, one species only, L. CATTA, frequenting rocky places destitute of trees. They are very agile and their movements are made with great rapidity. Their usual note is a kind of low grunt, but they often utter loud cries. Fruits of various kinds, and insects, bird's eggs and birds themselves, when they can catch them, furnish their principal means of subsistence. During the heat of the day they sleep, the head placed beneath the arms and the tail coiled about the neck. They walk on the hands and feet, both when on the ground or amid the trees, the tail usually carried high up. Great confusion has existed in the many published articles on the species, mainly from a lack of sufficient material by which a correct judgment could be obtained. Much variability occurs in the coloration, individuals of the same species differing greatly in this respect, and in not a few instances the female has been described as a species distinct from the male. In some cases there is wonderful difference in color between the sexes, and in such cases it is not to be wondered at that the female should have been considered as representing a species, the male of which had not at that time been obtained. To rectify the synonymy given by different writers is no easy task, as they have not always been in accord as to the name of different species, and much confusion has been created by bestowing various names upon the same species. Descriptions of these animals by the earlier writers were often so meagre and insufficient that it was difficult, if not impossible, to ascertain what one was intended, and the task was made no easier by the disappearance of the type from the collection of the Institution in which it was originally deposited. But after an examination of all the types now existing, and a careful study of the collections of these animals in the Museums of the World, the conclusions given in the articles on the various species, deemed worthy of recognition, have been reached.

LITERATURE OF THE SPECIES.

1758. *Linnæus, Systema Naturæ.*
Three species are included in LEMUR. only one of which belongs

to the genus, viz., L. CATTA. The others are *tardigradus,* of the genus LORIS, and *volans* included in GALEOPITHECUS.

1762. *Brisson, Regnum Animale.*
Four species of LEMUR are here given, under the genus *Prosimia:* viz., *P. fusca, P. pedibus albus, P. pedibus fulvis,* and *P. cauda annulis cincta.* The first three cannot be determined with any degree of certainty, the fourth, however, is without doubt LEMUR CATTA Linnæus and must be regarded as the type of Brisson's genus.

1766. *Linnæus, Systema Naturæ.*
Beside the species in the former edition of this work, given above, two more are added, L. MONGOS, and L. MACACO.

1774. *Schreber, die Säugthiere in Abbildungen nach der Natur mit Beschreibungen.*
Various species are given in this work under LEMUR, not all of which belong to that genus. *L. tardigradus* = LORIS TARDIGRADUS; *L. mongos* (nec Linn.), = L. FULVUS E. Geoff., and is mixed in synonymy and plates. L. FULVUS and L. RUFIFRONS are confused together and the synonymy given belongs partly to each, while plate XXXB represents L. FULVUS, and XXXIXA has a figure of L. RUFIFRONS. L. MACACO Linn., is also confused with L. VARIEGATUS (Kerr), and plate XLA represents the former, and XLB the latter, while the synonymy belongs partly to each. L. CATTA is correctly given. The "Yellow Maucauco" of Pennant is included without any Latin designation in the text; but is called on plate XLII, *Lemur simiasciurus. Lemur volans* = GALEOPITHECUS VOLANS.
A plate of L. ALBIFRONS, No. XXXIXD is given.

1777. *Erxleben, Systema Regni Animalis.*
Species of various genera are here included in the genus LEMUR, but the following valid forms are properly placed. L. MONGOS; (nasus albus, Africa orign.); L. MACACO, (nec synonymy); L. CATTA. The others are *L. tardigradus* = LORIS TARDIGRADUS; *L. flavus* = PERODICTICUS POTTO; *L. tarsus* undeterminable. *L. volans* = GALEOPITHECUS VOLANS.

1788. *Gmelin, Systema Naturæ.*
A number of species representing various genera as now accepted are here included in the genus LEMUR. *L. tardigradus* = LORIS TARDIGRADUS; *L. indri* = INDRIS INDRIS; *L. potto* = PERODICTICUS POTTO; L. MONGOZ; L. MACACO; L. CATTA; *L. murinus* = MICROCEBUS MURINUS; *L. bicolor* Miller, unde-

terminable; *L. laniger* = LICHANOTUS LANIGER; *L. volans* = GALEOPITHECUS VOLANS. No new species described.

1792. *Kerr, Animal Kingdom.*
LEMUR VARIEGATUS first described as *Lemur macacus variegatus.*

1796. *E. Geoffroy Saint-Hilaire, in Encyclopédie Méthodique.*
LEMUR ALBIFRONS described.

1812. *E. Geoffroy Saint-Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*
A list of the species as then known is here given. *L. macaco* (nec Linn.), = L. VARIEGATUS Kerr; *L. niger* = L. MACACO Linn.; *L. ruber* = *L. variegatus ruber,* which with L. NIGRIFRONS, and L. RUFUS are first described; L. ALBIFRONS; *L. albimanus* = L. MONGOZ Linn.; L. FULVUS first described; *L. anjuanensis* = L. MONGOZ Linn.; *L. collaris* = L. FULVUS; L. CATTA.

1820. *Desmarest, Mammalogie ou description des espèces de Mammifères.*
A list of Lemurs containing most of the errors of previous authors. *L. macaco* = L. VARIEGATUS; *L. ruber* = *L. v. ruber;* L. CATTA; *L. niger* = L. MACACO Linn.; L. FULVUS; *L. albimanus* = L. MONGOS Linn.; L. RUFUS; *L. collaris* = L. FULVUS; L. ALBIFRONS; L. NIGRIFRONS; *L. cinereus* = MYOXICEBUS GRISEUS E. Geoff.

1827. *R. P. Lesson, Manuel de Mammalogie ou Histoire Naturelle des Mammifères.*
A list of the species of the genus LEMUR is given in this work as then understood. The valid species are, L. CATTA; L. FULVUS; L. RUFUS; L. ALBIFRONS; L. NIGRIFRONS. The remainder are *L. macaco* = L. VARIEGATUS (Kerr); *L. ruber* = *L. v. ruber; L. niger* = L. MACACO Linn.; *L. mongoz* (nec Linn.), = L. FULVUS E. Geoff.; *L. albimanus* = *L.* MONGOZ Linn.; *L. collaris* = L. FULVUS; *L. cinereus* = MYOXICEBUS GRISEUS (E. Geoff.).

1829. *J. B. Fischer, Synopsis Mammalium.*
In this work a list of species of the genus LEMUR is given as they were understood at that time. The valid species are L. CATTA; L. RUFUS; L. FULVUS; L. ALBIFRONS; L. NIGRIFRONS. The remainder are, *L. ruber* = *L. v. ruber; L. niger* = L. MACACO Linn.; *L. mongos* (nec Linn.), = L. FULVUS Geoff.; *L. albimanus* = L. MONGOS Linn.; *L. cinereus* = MYOXICEBUS

griseus; *L. murinus* = Microcebus murinus; and *L. bicolor* undeterminable.

1833. *Bennett, in Proceedings of the Zoological Society of London.*
Lemur rufifrons first described.

1834. *F. Cuvier, Histoire Naturelle des Mammifères.*
Lemur mongos Linn., redescribed as *L. dubius.*

1840. *Wagner, Schreber die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*
Eight species of the genus Lemur are included in this work, four of which are correctly named, viz., L. catta; L. rufifrons; L. albifrons; *L. ruber* = *L. v. ruber.* The others are *L. macaco* = L. variegatus Kerr; *L. niger* = L. mongos Linn.; *L. mongos* (nec Linn.), = L. v. ruber; L. fulvus; and *L. collaris* = L. fulvus.

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*
The species of Lemur are here placed in the genus *Prosimia* with four divisions, *Les Macacos, Les Mongous, Les Maques,* and *Les Varis.* The first contains (*P.*) *catta; Les Mongous* has (*P.*) mongoz; with (*P.*) *macromongoz* = L. mongoz; (*P.*) *bugi* = L. mongoz; the third *Les Maques,* has (*P.*) *rufa* = L. rufus; (*P.*) *albimana* = L. mongos; (*P.*) *brissonii* = L. mongos; (*P.*) albifrons; (*P.*) rufifrons; (*P.*) *ocularis* = L. nigrifrons; (*P.*) *frederici* = L. albifrons; fourth race *Les Varis* contains (*P.*) macaco; with several varieties; the red variety = *L. v. ruber.*

1842. *J. E. Gray, in Annals and Magazine of Natural History.*
Lemur coronatus first described.

1842. *R. P. Lesson, Nouveau Tableau du Règne Animal.*
Lemur variegatus Kerr, renamed *Prosimia erythromela.*

1848. *Schuermans, Académie Royale des Sciences et Belle-Lettres de Belgique, in Mémoires Couronnés et Mémoires des Savants Étrangers.*
L. coronatus redescribed as *L. chrysampyx.*

1850. *E. Geoffroy Saint-Hilaire, in Comptes Rendus de l'Académie des Sciences.*
Lemur rubriventer ♂, first described, and the ♀, described as Lemur flaviventer.

1851. *I. Geoffroy Saint-Hilaire, Catalogue des Primates.*
In this list of Lemurs is given all the species designated by previous authors, and himself, but no new ones described. The

valid species are, L. CATTA; L. VARIEGATUS; *L. ruber* = *L. v. ruber;* L. RUBRIVENTER; L. ALBIFRONS; L. NIGRIFRONS; *L. albimanus* = L. MONGOS Linn.; *L. collaris* = L. FULVUS; *L. anjuanensis* = L. MONGOS Linn.; L. MONGOS; L. FULVUS; and *L. chrysampyx* = L. CORONATUS.

1855. *Wagner, Schreber die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*
The list of Lemurs in the previous volume of this work is here considerably enlarged and fourteen species are enumerated, only six of which are valid, viz., L. CATTA; *L. ruber* = *L. v. ruber;* L. RUBRIVENTER; L. RUFUS; L. ALBIFRONS; L. RUFIFRONS; and L. CORONATUS. The others are, *L. macaco,* (nec Linn.), = L. VARIEGATUS; *L. flaviventer* = L. RUBRIVENTER; *L. collaris* = L. FULVUS; *L. brunneus* = L. FULVUS; *L. mongos* (nec Linn.), = L. FULVUS; *L. anjuanensis* = L. MONGOS Linn.; and *L. chrysampyx* = L. CORONATUS.

1862. *Bartlett, in Proceedings of the Zoological Society of London.*
LEMUR MACACO, ♀, redescribed as *L. leucomystax.*

1863. *J. E. Gray, in Proceedings of the Zoological Society of London.*
In an elaborate paper on the "Lemuroid Animals" LEMUR is divided into a number of genera which cannot be considered as having any claim to a distinct rank. Under *Varecia* are placed L. VARIEGATUS as *V. varia; L. niger* = L. MACACO; *L. ruber* = *L. v. ruber;* and *L. leucomystax* = L. MACACO. In LEMUR is L. CATTA. *Prosimia* has L. ALBIFRONS; L. NIGRIFRONS; *L. melanocephalus* = L. FULVUS; *L. mongos* (nec Linn.), = L. FULVUS; L. RUFIFRONS; *L. xanthomystax* = L. FULVUS; L. CORONATA; *L. albimana* = L. MONGOS; *L. anjuanensis* (nec Geoff.), = L. NIGRIFRONS; and *L. collaris* = L. FULVUS.

1864. *St. George Mivart, in Proceedings of the Zoological Society of London.*
An important paper on the crania and dentition of the LEMURIDÆ embracing all the genera, with the species of some as then understood, and with definitions of genera and subgenera. Of the genus LEMUR a careful specialized description is given of the skull and teeth, and comparisons made with other genera of the Family. The synonymy and description of the genus are given, but a list of the species is omitted. LEMUR is placed in the subfamily LEMURINÆ, followed by MYOXICEBUS (*Hapalolemur*), MICROCEBUS, CHEIROGALEUS (!), and LEPILEMUR (!). The conclusion of his investigation may be summed up in his own

words: "I have been quite unable to detect any cranial or dental characters which would justify a subdivision of the genus Lemur." He divides the LEMURIDÆ into four subfamilies with fifteen genera, an arrangement that has not been adopted, as the species of several of the genera, such as DAUBENTONIA, TARSIUS, and NYCTICEBUS etc., are considered as possessing characters sufficiently distinctive to make their species representative of independent Families.

1867. *St. George Mivart, in Proceedings of the Zoological Society of London.*

This is a supplementary paper to the one mentioned above, in which the genera CHEIROGALE and MICROCEBUS are compared and the differences found to be few, but "it will be possible (and perhaps even useful) still to retain, provisionally at least, the distinction between CHEIROGALEUS (!) and MICROCEBUS, though reposing mainly, if not exclusively on a few cranial and dental characters." LEPIDOLEMUR is also discussed and is considered not to have any marked relationship to any other genus. The tarsal structure of these three genera and that of GALAGO is compared.

1868. *Schlegel and Pollen, Recherches sur la Faune de Madagascar.*

LEMUR NIGRIFRONS from the Island of Mayotte redescribed as *L. mayottensis.*

1870. *Fitzinger, in Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften zu Wien.*

In a revision of what he calls the order of Half apes 'Halbaffen,' under the genus LEMUR, this Author gives a list of the known forms with their synonymy considerably mixed, continuing the errors of previous writers, and adding some of his own. The following valid species are given: L. CATTA; L. MACACO; L. MONGOZ; L. ALBIFRONS; L. RUFIFRONS; L. CORONATUS; *L. ruber* = *L. v. ruber;* L. RUBRIVENTER; and L. NIGRIFRONS. The other forms recognized are, *L. collaris* = L. FULVUS; *L. macaco-griseo-maculatus* = *L. variegatus* Kerr; *Lemur macaco albus* possibly an albino of L. VARIEGATUS Kerr; *Lemur niger* = L. MACACO Linn.; *L. anjuanensis* = L. MONGOS; *L. chrysampyx* = L. CORONATUS; *L. flaviventer* = L. RUBRIVENTER; *L. albimanus* = L. MONGOS; *L. cuvieri* = L. MONGOS; and *L. brunneus* = L. FULVUS.

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in the Collection of the British Museum.*

This is mainly the paper published in the Proceedings of the Zoological Society of London in 1863. *Varecia* now contains L. VARIEGATUS as *V. varia; L. ruber = L. v. ruber;* and *L. leucomystax* = L. MACACO; *L. niger* being made a synonym of L. VARIEGATUS! and *Prosimia* contains the same names as in the previous review.

1871. *J. E. Gray, in Annals and Magazine of Natural History.* LEMUR RUBRIVENTER redescribed as *Prosimia rufipes.*

1876. *H. Schlegel, in Muséum d'Histoire Naturelle des Pays-Bas, Les Singes, Simiæ.*

This volume is a most valuable and authoritative review of the Primates, the Author's conclusions being founded upon the great collection of these animals in the Leyden Museum, which was doubtfully equalled by that of any other Institution at that time. The opinions expressed therefore are entitled to the greatest respect, and when it may be necessary to disagree with the Author, it will be found generally that new material, obtained since his work was published, has shed a clearer light upon doubtful points, that could not be decided satisfactorily when he was writing his review.

Of the genus LEMUR he recognizes comparatively few species, and divides them into two Sections with subdivisions added. These Sections are I, with the tail having more or less a uniform coloration such as grayish, brownish or rufous, the apical half being often brown or blackish, and II, with the tail ringed with black and white. The first is again divided into A, with those species having the nose black, and B, with those having the nose covered with white hairs. A has four subdivisions, *a* containing animals of large size with tails nearly as long as the body, chin and upper part of throat naked, fur thick and woolly, varied chiefly with black and white and reddish brown, and ears hidden by the long hairs on each of their sides, color very variable but not dependent on age of animal. This division has L. VARIEGATUS Kerr. *β*. Pelage of male black, that of female, more or less bright red. In this is included L. MACACO Linn. *γ*. Front and crown more or less black with a large whitish spot on each side of the brow; ears naked at edge, remainder covered with short hairs. Color gray tinged sometimes with brown, or fawn or red; the four hands of the same hue as the dominant color, or verging to red. Above reddish or grayish white. Tail at base above, and hind part of thighs of a bright red, more or less deep in hue. Apical half of tail ordinarily black. Individual modifications of these hues often occur, and local differences in the style of coloration are more or less apparent as if indicating subspecies. Two species are placed in this division *L. collaris* E. Geoff., = L. FULVUS E. Geoff., and *L. c. rufus* = L. RUFUS E. Geoff. δ Head white to the vertex; with L. ALBIFRONS. *e.* Ears rather small, thickly covered with, and hidden in the fur. Color of pelage brownish red ticketed with black, the tail more or less black. Under parts either red, or yellowish or whitish. One species represents this division L. RUBRIVENTER E. Geoff. B. Nose covered with white hairs; ears covered. Two species are placed here L. MONGOZ Linn., and L. CORONATUS Gray. No new species are described, but while *L. mayottensis* = L. NIGRIFRONS examples are placed among those of *L. collaris* and L. FULVUS, in a foot note attention is called to its distinctness from those species.

1880. *Sclater, in Proceedings of the Zoological Society of London.*
LEMUR NIGERRIMUS described.

1890. *A. Milne-Edwards and Grandidier, in Histoire Physique, Naturelle et Politique de Madagascar.*
LEMUR CINEREICEPS is figured but not described.

1894. *F. E. Beddart, in Proceedings of the Zoological Society of London.*
A paper in which the brain of the various species of the LEMUROIDEA are described and compared. The decision as regards the species of the genus LEMUR, is, that the range of variation is not large, but the bigger brains are more complex than the smaller. In a subsequent paper in the second volume of the same publication, the brains of LEMUR MACACO and LEMUR CORONATUS are described and a comparison made with the brain of PERODICTICUS POTTO.

1901. *C. I. Forsyth-Major, in Proceedings of the Zoological Society of London.*
An important contribution dealing with the *os planum* and lachrymal in Lemurs and Monkeys. The conclusion is, that in those LEMURIDÆ which have a large lachrymal the *os planum* is reduced and vice versa. The following points in existing species are insisted upon when there is a "great facial expansion of the lachrymal and particularly its extension beyond the fossa lachrymalis."

1. "It is scarcely more frequent in Lemurs than in the

higher groups; the greatest reduction of the lachrymal occurs precisely within the Prosimiæ.

2. It is at its minimum in young individuals.
3. The genera of each group in which this character is presented have certainly no closer relationship with those of another group.
4. It can always be traced back to an elongation of the facial cranium, necessitated by a more powerful dentition.

This extension of the lachrymal, is, in the Lemurs as well as in the Monkeys, not a primitive condition, but an extreme specialization.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES AND SUBSPECIES.

The species of the genus LEMUR are found on the Island of Madagascar and some of the small neighboring islands; Madagascar, as would naturally be inferred on account of its large size, containing most all of the species, if not indeed all of them, and this island may be regarded as the original home of the genus. On the northern portion of Madagascar from the east to the west coast, from the mouth of the river Antamba and the environs of the Bay of Mazamba to Bombetok (Schlegel), and also on the north eastern coast, (Schlegel, limits not defined), L. FULVUS is found. On the same coast from Vohemar to the Bay de Diego is the range of L. CORONATUS, and from Adampone to Cape Masoala L. VARIEGATUS is met with. Still on the north east coast from the Bay of Antongil to Masindrano we have L. ALBIFRONS and *L. v. ruber;* and from Teneriffe to Fort Dauphin in the south L. RUBRIVENTER is found. In the rocky lands of the south and south west portion of Betsileo Province, and also in the Province of Anossi, is the home of L. CATTA; and in southern Madagascar from the River Tsidsibon to the River Mangonka, L. RUFUS has its range. On the north west coast from Baly to Marinda, and also on the neighboring islands of Anjuan (Johanna), Comoro, Nossi-bé, and Mohilla, L. MONGOS is found; and from Cape Ambre to Ifassy L. NIGERRIMUS ranges; while from Ifassy to Manaharana are the limits of L. MACACO. From Baly to Cape St. Vincent L. RUFIFRONS occurs; and from some portion of Madagascar as given by E. Geoffroy, locality not stated, and also from the Island of Mayotte, L. NIGRIFRONS is found. For L. CINEREICEPS Milne-Edwards and Grandidier, no locality has been given, those authors having simply published a figure of the species without any description.

The ranges of the recognized forms of LEMUR here given may probably be more extensive than is known at present, at least for some of them, but further exploration of Madagascar, especially in the interior will be necessary to decide positively any doubts now held upon this point. The limits given have been ascertained from specimens in different Museums having particular localities attached to them, and also from various maps placed in the collection of Lemurs in the Paris Museum, prepared, presumably, under the direction and supervision of Grandidier and A. Milne-Edwards. It is greatly to be regretted that the text for the Lemurs in the Histoire Naturelle de Madagascar of the authors above named, was never published, for it would have undoubtedly have thrown much light upon the variation, distribution and habits of these singular animals. The plates do indeed give in a restricted manner, some idea of how Lemurs vary, but it would require more than one volume of illustrations to exhibit the often extraordinary differences shown by these animals in the hues of their coats, both between individuals, and also at times between the sexes of the same species. This could only be properly demonstrated in the text of a volume devoted solely to this group. In a work like the present, lack of space only permits that the attention be called to this fact and the inclusion, in the articles on the species, of the descriptions of a few striking instances, which of necessity only give an inadequate idea of the conditions existing.

KEY TO THE SPECIES.

MALES.

A. Nose white.
  - *a.* Back of head grayish fulvous .... *L. mongoz.*
  - *b.* Back of head black bordered with rufous ..... *L. coronatus.*

B. Nose black.
  - *a.* Without ruff on sides of neck.
    - *a.'* Tail without annulations.
      - *a.''* Greater portion of head not white.
        - *a.'''* With spot at root of tail .... *L. nigrifrons.*
        - *b.'''* Without spot at root of tail.
          - *a.*⁴ Forehead and top of head black; gray spot over eye .... *L. fulvus.*
          - *b.*⁴ Forehead and top of head rufous .... *L. rufifrons.*
          - *c.*⁴ Forehead and top of head rufous brown or chestnut .... *L. rubriventer.*

- *d.*^{4} Forehead and whiskers yellowish white ....*L. rufus.*
- *b.''* Greater portion of head white.
  - *a.'''* Body dark brown speckled.......*L. albifrons.*
  - *b.'''* Body orange red ....*L. cinereiceps.*
- *c.''* Head and body all black.
  - *a.'''* No upstanding crest on forehead...*L. macaco.*
  - *b.'''* With upstanding crest on forehead ....*L. nigerrimus.*
- *b.'* Tail with annulations ....*L. catta.*
- *b.* With ruff on sides of neck, color exceedingly variable.
  - *a.'* Colors mostly black and white ....*L. variegatus.*
  - *b.'* Colors mostly red ....*L. v. ruber.*

LEMUR MONGOZ Linnæus.

The Mongooz Edw., Glean. Nat. Hist., 1785, p. 12, pl. CXXVI.

Lemur mongoz Linn., Syst. Nat., I, 1766, p. 44; Erxl., Reg. Anim., 1777, p. 66; Gmel., Syst. Nat., I, 1788, p. 42; Shaw, Genl. Zool., I, 1800, pp. 96, 112, pl. XXXIII; Fisch., Anat. Maki, 1804, p. 19; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 267; V, 1855, p. 44, excl. syn.; van d. Hoev., Tijdsch. Natur. Geschied., XI, 1844, p. 34; Gerv., Hist. Nat. Mamm., I, 1854, p. 168, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 216, 219; Schleg., Naderl. Tijdsch. Dierk., III, 1866, p. 75; Schleg. and Pollen, Faun. Madag., II, 1868, p. 4; Sclat., Proc. Zool. Soc. Lond., 1871, p. 231, excl. syn.; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 312; Anders., Cat. Mamm. Ind. Mus. Calc., 1861, p. 93; Major, Proc. Zool. Soc. Lond., 1901, p. 249; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 544, Zool. Ser.

Prosimia mongos Bodd., Elench. Anim., 1784, p. 65; Less., Man. Mamm., 1827, p. 62.

Lemur albimanus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 161; I. Geoff., Cat. Primates, 1851, p. 72; Gerv., Hist. Nat. Mamm., I, 1854, p. 167; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 215, 219; A. Milne-Edw. et Oust., Nouv. Archiv. Mus. Hist. Nat., X, 1888, p. 282; A. Milne-Edw. et Grandid., Hist. Nat. Madag., 1890, Atl., II, pls. CLVII, CLXII, CLXIV, CLXV, figs. 1, 2; Lorenz, Abhand. Senckenb. Natur. Geschied., XXI, 1898, p. 450, pl. XXXIII, fig. 2.

Lemur anjuanensis E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 161; Gray, Hist. Nat. Mamm., I, 1854, p. 168, fig.; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 145; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., 1856, fasc. I, pp. 216, 219; Peters, Reis. Nach. Mossamb., Zool., I, 1858, p. 21; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 627; Gunth., Ann. Mag. Nat. Hist., II, 5th Ser., 1879, p. 215.

Mongous d'Anjouan F. Cuv., Hist. Nat. Mamm., 1819, p. 2, pl. LXXXVII.

Lemur dubius F. Cuv., Hist. Nat. Mamm., 1834, pl. XCIII, ♀.

Prosimia bugi Less., Spec. Mamm., 1840, p. 227.

Prosimia albimanus Less., Spec. Mamm., 1840, p. 239; Gray, Proc. Zool. Soc. Lond., 1863, p. 139; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 75; Forbes, Handb. Primates, I, 1894, p. 74.

Prosimia brissonii Less., Spec. Mamm., 1840, p. 230.

Prosimia collaris (nec E. Geoff.), Gray, Proc. Zool. Soc. Lond., 1863, p. 139.

Lemur cuvieri Fitzing., Sitzungsb. Kaiserl. Akad. Wiss. Wien, LXII, 1, 1870, p. 58.

MONGOOSE LEMUR.

Type locality. Madagascar.

Geogr. Distr. North west coast of Madagascar from north of Baly to Marinda, and the Islands of Anjuan, (Johanna), Comoro, Mohilla, and Nossi-bé.

Genl. Char. Nose white never black; rufous patch on throat; hands sometimes white.

Color. Male. Face from between eyes to nostrils, and side of nose and upper lip white or grayish white; space around eyes black; forehead grizzled black and gray of varying intensity; cheeks, and beneath ears rufous in some specimens, continuing beneath and almost meeting on the throat; top of head and neck, and in some specimens the upper part of back, dark gray, hairs tipped with fulvous; rest of upper parts, and outer side of limbs brownish gray; hands and feet pale gray, sometimes white; a gray band across chest; rest of under parts fulvous. Basal portion of tail like back, remainder iron gray grading into black at tip.

Female. Similar to male except that the cheeks, and patches beneath ears, throat, inner side of arms, and upper part of chest are white; a black band across the forehead.

Measurements. Total length, 876; tail, 420; foot, 79. Skull: occipito-nasal length, 76-82; Hensel, 67; intertemporal width, 27-31; median length of nasals, 20; width of braincase, 35; palatal length, 32-39; length of upper molar series, 25-28; length of mandible, 59; length of lower molar series, 32.

The type of *L. flavifrons* is in the British Museum, and the following is a description of it. Pale yellowish band across forehead; nose bright rufous; top of head, body above, and beneath ears rufous, dorsal line darkest; rump paler, more reddish; shoulders yellowish; outer side of limbs rufous like head; hands and feet dark rufous; chin and throat whitish; inner side of limbs, neck and body beneath yellowish, tail rufous.

A second specimen also a female, is very much darker in color, being bright chestnut on head and body, dorsal region and hands blackish chestnut, feet and tail rufous. While having a general resemblance to each other, these two examples differ greatly in depth and shade of color.

Schlegel in his monograph of the Lemurs was the first to call attention to the fact that it was not the animal that was most common in collections, and of a rather large size which should bear the name of MONGOZ given by Linnæus, but a smaller form distinguished in the male by rufous patches beneath the ears, extending sometimes on to the throat, and with a whitish face and nose. Later Forsyth-Major in the Proc. Zool. Soc. Lond., 1901, p. 249, published a paper in which he showed very conclusively that the wrong animal had been accorded the Linnæan name of MONGOZ, and agreed with Schlegel that the smaller rufous-cheeked animal should rightfully bear the appellation. The female is very similar to the male in general appearance, but lacks the rufous coloring; and the patches on the side of head and throat, called whiskers by Schlegel, are white, and she is rather lighter on the under side of the body. Besides Madagascar, this species is a native of the islands of Anjuan, (Johanna), Mohilla, and Nossi-bé.

According to Schlegel and Pollen, (l. c.) "this species inhabits the forests which extend from the bay of Diego-Juarez to the bay of Bambetoc, also the forest of Loncoubé in the island of Nossi-bé." The animals go in troupes and keep to the highest trees. Ordinarily they can be seen towards evening, and then their voices are head in loud cries, for at that time they are exceedingly noisy. Sometimes when danger approaches these cries are changed to growling. Their agility in leaping from tree to tree is wonderful and can hardly be followed with the eyes, and it is easier to kill a bird on the wing than one of these animals when leaping. They have the habit when pursued of dropping suddenly from a lofty tree into the bushes, and the hunter thinking the individual to be dead, is soon undeceived by seeing it quickly seeking another tree a considerable distance away, and this makes following them difficult. When raised in captivity from a very youthful age, it is gentle and friendly. It will eat all kinds of fruits, and is especially fond of bananas, upon which it chiefly subsists in the wild state. It is also fond of bird's brains, which, after breaking the skull with its teeth, are sucked into the mouth, but it does not eat the bird. The inhabitants of Nossi-falie will not permit this animal to be introduced there, as they contend that its presence would be a profanation of their so-called sacred island.

LEMUR CORONATUS Gray.

Lemur coronatus Gray, Ann. Mag. Nat. Hist., Ser. X, 1842, p. 257; *Id.* Voy. Sulphur, 1844, p. 15, pl. IV; van d. Hoev., Tijdsch. Natur. Geschied., 1844, p. 36; I. Geoff., Cat. Primates, 1851, p. 74; Gerv., Hist. Nat. Mamm., I, 1854, p. 168, fig.; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 144; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., 1856, fasc. I, pp. 213, 217; Fisch., Metth. Natur. Akad. Wiss. Wien, 1870, p. 634; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 313; A. Milne-Edw. et Grandid., Hist. Nat. Madag., 1890, Atlas, pls. CLVIII-CLXI, CLXV, CLXVI; Forbes, Handb. Primates, I, 1894, p. 75.

Lemur chrysampyx Scheurm., Mém. Couron. Acad. Brux., XXII, 1848, p. 6, (Part.); I. Geoff., Cat. Primates, 1851, p. 74; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 146; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., 1856, fasc. I, pp. 215, 218; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wiss. Wien, 1879, p. 634.

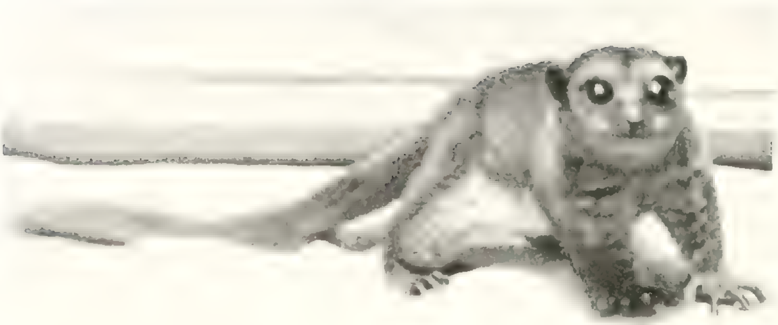
Prosimia coronata Gray, Proc. Zool. Soc. Lond., 1863, p. 138; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 75.

CROWNED LEMUR.

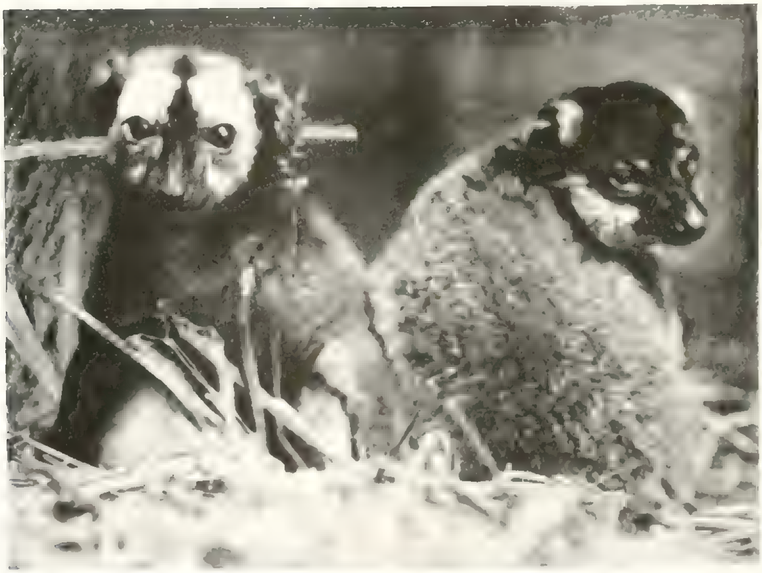
Type locality. Madagascar. No particular locality given. Type in British Museum.

Geogr. Distr. North eastern Madagascar from Bay de Diego to Vohemar.

Genl. Char. Tips of ears naked, tail longer than body.



MICROCEBUS COQUERELI.



LEMUR NIGRIFRONS. LEMUR RUFUS.

Color. Male. A black or blackish brown spot on center of head, sometimes only a stripe, in some specimens occupying nearly all the space between the ears; orbital rings black; face and nose grayish white; ears white; cheeks and forehead rufous; upper part of body dark sienna gray; outer side of limbs, and under side of body pale rufous; tail rufous on basal half, remainder blackish to tip, beneath much paler, but becoming blackish at tip; hands and feet pale rufous like outside of limbs. Ex type British Museum.

Female. Resembles the male but washed with rufous on the back; forehead and face gray; between eyes and side of nose, ears and stripe in front of ears, white; under parts yellowish white; tail dark gray for entire length, as are also the limbs; the rufous band on top of the head extends downwards on sides of head in front of ears; hands and feet grayish white; tail iron gray.

Measurements. Skull: total length, 81; occipito-nasal length, 76; Hensel, 62; intertemporal width, 27; zygomatic width, 49; median length of nasals, 21; length of upper molar series, 26; length of mandible, 54; length of lower molar series, 24.

LEMUR NIGRIFRONS E. Geoffroy.

Lemur nigrifrons (nec Linn.), E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 260; *Id.* Cours Hist. Nat. Mamm., 1828, p. 19, 11me Leçon; F. Cuv., Hist. Nat. Mamm., II, 1824, Livr. XXX, pl. XVIII; I. Geoff., Cat. Primates, 1851, p. 73; Gerv., Hist. Nat. Mamm., I, 1854, p. 168, figs.; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 215, 219; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 73; A. Milne-Edw. et Grandid., Hist. Nat. Madag., Atlas, II, 1890, pls. CXXXVII, CXLIII.

Prosimia ocularis Less., Spec. Mamm., 1840, p. 231.

Prosimia anjuanensis (nec Geoff.), Gray, Proc. Zool. Soc. Lond., 1863, p. 139; 1872, p. 862; Gunth., Ann. Mag. Nat. Hist., III, 1879, 5th Ser., p. 216.

Prosimia nigrifrons Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 73; *Id.* Proc. Zool. Soc. Lond., 1872, p. 850; Bartl., Proc. Zool. Soc. Lond., 1879, p. 768.

Lemur mayottensis Schleg., Ned. Tijdsch. Dierk., 1866, p. 76; Schleg. et Pollen, Faun. Madag., 1868, p. 3, pl. II; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 308.

BLACK-FRONTED LEMUR.

Type locality. Island of Madagascar.

Geogr. Distr. Islands of Madagascar and Mayotte.

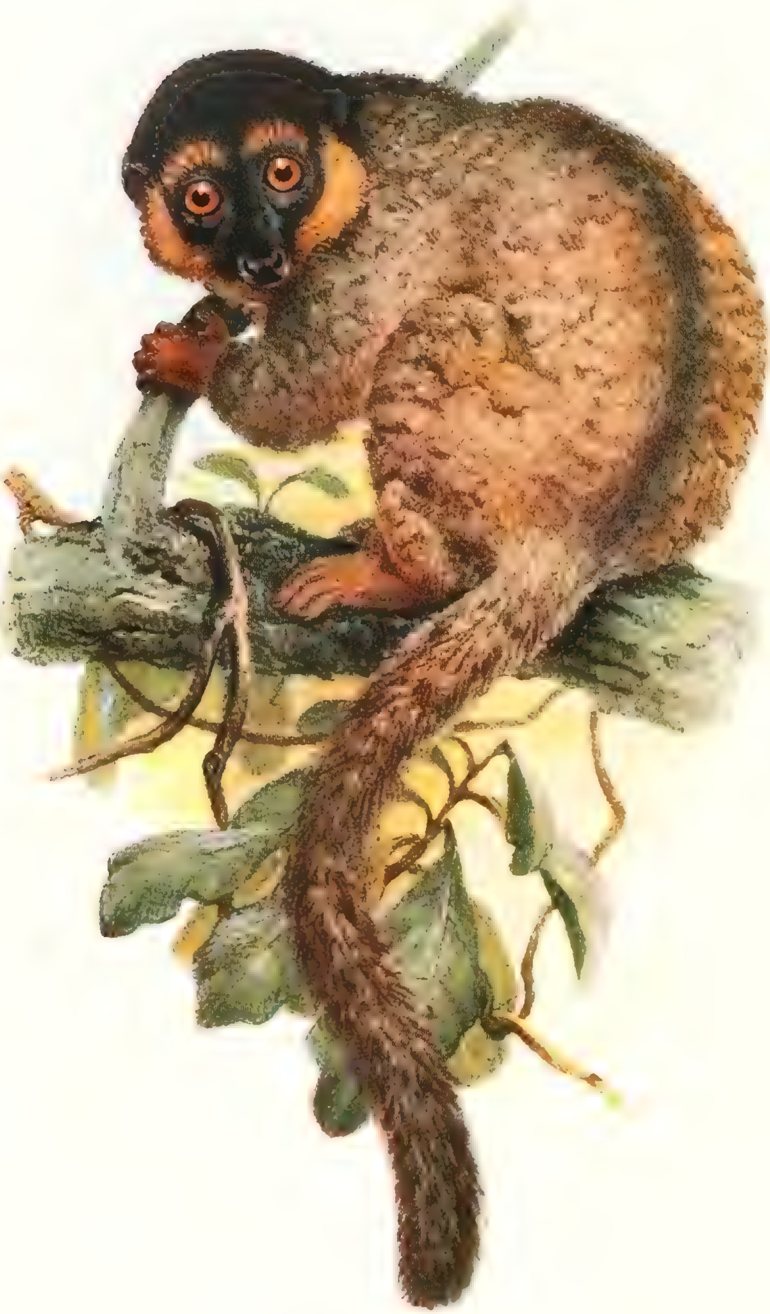
Color. Face black; top of head, forehead and patch at top of nose black; grayish buff spot over each eye; entire upper parts sooty brown washed with yellowish; outer side of limbs paler; cheeks yellowish or buffy; entire under parts buff; hands and feet reddish; tail reddish with black spot at base above. Ex specimen in Paris Museum probably a type.

Ex specimen from the Island of Mayotte. Face, nose and lips black; black band across forehead projecting to a point in front at center; cheeks and back of head and line in front of black on forehead, rufous; body above, and outer side of limbs fulvous, darkest and more reddish on dorsal line; under parts of body, and inner side of limbs yellowish brown; rufous spot at vent; hands dark brown; feet rufous; black spot at base of tail above; basal part of tail rufous grading into black for three fourths the length, the hairs tipped with rufous.

Measurements. Total length, 906; tail, 500; foot, 97; ear, 36. (Collector's measurements). Skull: occipito-nasal length, 82; Hensel, 76; zygomatic width, 54; intertemporal width, 28; palatal length, 39; width of braincase, 38; length of upper molar series, 30; length of mandible, 60; length of lower molar series, 35.

The supposed type of L. NIGRIFRONS in the Paris Museum, has the black spot at the root of the tail above, characteristic of the island form named by Schlegel *mayottensis.* This spot is generally very conspicuous and causes the specimens from Mayotte to be readily recognized. Another peculiarity is the absence of spots over the eyes, which is observable in another "type" in the Paris Museum, although the one described has these marks; the muzzle is also broad and inflated, quite different in shape from the rather pointed muzzle of L. FULVUS; and the third upper premolar and the first and second upper molars are larger. There is much individual variation in color, as in the other species, and some are all yellowish gray with all the top of the head black, and no rufous showing. It would seem that the characters mentioned are sufficient to give this form a distinct rank, and that it was an error to regard it as a synonym of L. FULVUS. Between the Paris Museum examples and those from Mayotte Island there are no grounds for separation, and it may be, Geoffroy's specimens came originally from Mayotte Island, as it is not likely, at the time he wrote, that a discrimination of the islands would be made, but all material from that quarter would be labelled Madagascar.

Messrs. Schlegel and Pollen state that they discovered this species



LEMUR FULVUS

during their visit to the island of Mayotte, situated in the western part of the bay of Gongonie. It goes in bands of from six to twenty individuals in the primeval forests of the island. They are seen both by day as well as at night, keeping mostly to the trees, but descending occasionally to the ground to look for fallen fruit. At the setting of the sun they utter their plaintive cries in unison. When pursued by dogs they seek the highest trees, intently watching their enemy and growling. It is only when they see the hunter that the entire band takes flight, seeking the depth of the forest where it is exceedingly difficult to follow and shoot them. When wounded it defends itself against the dogs with great fury, and it has been seen to leap upon the back of one and bite its ears and neck. At Mayotte in hunting this Lemur, a cur dog is used, which on perceiving one of the animals keeps up a continual barking, jumping at the same time against the tree on which the Lemur is. The latter pays more attention to the dog than to the hunter, and is easily approached and shot. This species is fond of wild dates, and makes long journeys in search of them. The flesh of this Lemur is excellent, and tastes like that of the Hare.

LEMUR FULVUS E. Geoffroy.

Lemur fulvus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 161, No. 9; Smith, Proc. Zool. Soc. Lond., 1902, p. 61.

Lemur collaris E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 161, No. 11; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 270; V, 1855, p. 143; I. Geoff., Cat. Primates, 1851, p. 72; Gerv., Hist. Nat. Mamm., I, 1854, p. 167; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 216, 228; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 52.

Lemur mongos (nec Linn.), Wagn., Schreb., Säugth. Suppl., I, 1840, p. 270; V, 1855, p. 144; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 622; Forbes, Handb. Primates, I, 1894, p. 71.

Lemur brunneus van d. Hoev., Tijdsch. Natur. Geschied., V, 1844, p. 35; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 143; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 622.

Prosimia melanocephala Gray, Proc. Zool. Soc. Lond., 1863, p. 137, pl. XVIII; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 74.

Prosimia xanthomystax Gray, Proc. Zool. Soc. Lond., 1863, p. 138, pl. XVII; *Id.* Cat. Monkeys, Lemurs and Fruit-eating

Bats, Brit. Mus., 1870, p. 73; Bartl., Proc. Zool. Soc. Lond., 1879, p. 68.

Prosimia mongos (nec Linn.), Gray, Proc. Zool. Soc. Lond., 1863, p. 137; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 74.

Prosimia flavifrons Gray, Proc. Zool. Soc. Lond., 1867, p. 596, pl. XXXI; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, Append. p. 132, ♀.

Lemur flavifrons Sclat., Proc. Zool. Soc. Lond., 1871, p. 232, ♀.

FULVOUS LEMUR.

Type locality. Madagascar.

Geogr. Distr. Northern part of the Island of Madagascar.

Genl. Char. Distinguished from L. MONGOS Linn., by its black nose.

Color. Male. Top of head, middle of forehead, face and nose black; ears scantily haired, black fringed with white; spot on each side of forehead iron gray; cheeks iron gray varying to whitish in different individuals, this hue extending beneath the ears; upper part of body rufous or reddish gray, becoming in some specimens darker and more reddish on the rump; outer side of limbs reddish gray like back; hands and feet reddish brown; under parts of body, and inner side of limbs pale yellow; tail yellowish brown, beneath at base pale orange yellow.

Lemur mongos collaris 67. 10. 5. 20. There is a specimen in the British Museum purchased from the Zoological Society of London and named *Lemur mongos collaris* which is peculiar and should be noticed.

Type locality. Madagascar.

Color. Nose gray in the middle, black at top and at tip; a partial orbital ring and forehead black, a rather indistinct line across top of head, space beneath ears on neck, cheeks and sides of throat rufous; a yellowish band from back of shoulders across back at base of neck; shoulders, arms, grizzled gray and black; upper parts of body and thighs speckled grayish brown with a yellow tinge; legs below knees sooty; hands and feet blackish; chin and middle of throat white; a blackish band across upper part of breast; line down center of inner side of arms gray; under parts of body and inner side of legs sooty; tail sooty speckled with whitish, becoming black towards tip.

Measurements. Total length, 780; tail, 440; foot, 80. Skull in the specimen.

This example obtained from the Zoological Society is apparently without any history beyond the fact of its purchase. It does not agree exactly with any known species. Its nose is neither black nor white, and in the rufous coloring of the cheeks, sides of the neck and throat it resembles L. MONGOS Linn., but its black hands and feet separate it from that species, as do also its dusky under parts. This is not Gray's *Prosimia collaris* which = L. MONGOS Linn., nor does it seem to agree with any described species; and the thought arises, can it be a hybrid born in the Zoological Gardens, as it seems to have resemblance to more than one species, its nose neither black nor white keeping it out of both groups as arranged in the key of the species.

There are great variations in color and in head markings among individuals of this species, and this fact has been the cause of the multiplication of names, and confusion in the synonymy. It is the common Lemur called L. MONGOS generally by authors and attributed to Linnæus. It is however a larger animal than the true L. MONGOS Linn., and has a black face and nose which the other species never has. Attention has been called to the error, so universally committed by authors, by both Schlegel and Major as mentioned in the article on L. MONGOS Linn. The names FULVUS and *collaris* were bestowed upon this species by E. Geoffroy St. Hilaire (l. c.) and both published on the same page, but as FULVUS comes first, it must replace the somewhat better known *collaris*. The types of both L. FULVUS and *L. collaris* have disappeared from the collection in the Paris Museum, but there is an example marked *L. collaris* E. Geoff., and which was figured in the Histoire Naturelle de Madagascar by Milne-Edwards and Grandidier. This animal died in the menagerie of M. Polito, and was given by him to the Museum in 1828. While therefore, it cannot be any specimen examined by Geoffroy when he named the species, it is probable that it represents fairly enough Geoffroy's form so far as can be determined by his meagre description. This Paris Museum specimen may be described as follows: top of head and back of neck blackish maroon; entire upper parts and outer side of limbs reddish brown; dorsal line from neck broadening on rump, dark reddish brown; a reddish brown spot over each eye; cheeks and large patch between ears extending to throat bright rufous; throat, under part of body and inner side of limbs pale yellow, (probably faded); hands and feet rufous; wrists and ankles bright rufous; tail chestnut.

When considering examples of a species so varying in color as the present, it is not to be wondered that writers with insufficient material at their command should have been induced to describe some of their specimens as distinct species, but it is not always easy, when such examples are no longer accessible for examination, to accurately define what species they really belong to. And this has been one of the difficulties in the synonymy of the present species. The descriptions are often meagre and insufficient, and the types no longer existing there was little left to assist a correct decision to be reached. Some types remain such as *L. xanthomystax* Gray, and *L. melanocephalus* Gray, both of which are undoubtedly the same as L. FULVUS. These are both in the British Museum and may be described as follows:

L. xanthomystax Gray, (l. c.). Head and back of neck black; black line between eyes; nose black; dark buff spot tinged with rufous over each eye; large bright rufous spot on each side of throat; fur of body and limbs rufous gray, hairs black tipped; dorsal line dark reddish brown; under part of body pale rufous; hands and feet rufous; basal portion of tail dark brown, remainder blackish. Ex type in British Museum.

Measurements. Skull: occipito-nasal length, 90; Hensel, 77; intertemporal width, 31; zygomatic width, 54; median length of nasals, 22; length of upper molar series, 30; length of mandible, 62; length of lower molar series, 27.

L. melanocephalus Gray, (l. c.). Top of head with a narrow line extending over the ears to the occiput; forehead, face and nose black; upper part of body grizzled chestnut and black; outside of arms iron gray; outer side of legs brownish gray, chin and throat pale yellowish; outer side of limbs, and body beneath buffy; hands dark brown; feet bright rufous; tail chestnut with black tips to the hairs on basal half, but nearly all black on apical half. Ex type British Museum.

It will thus be seen from the above descriptions that while the general resemblance is the same, yet there are various differences in coloration sufficient to mislead unless the species' tendency to exhibit individual variations was not known nor understood. The black nose will, however, always distinguish L. FULVUS from L. MONGOS, as well as its larger size, but neither of these characters are sufficient to separate it from the next species with which it is more closely allied, at least so far as coloration is concerned.

LEMUR RUFIFRONS (Bennett).

Lemur mongos Schreb., Säugth., I, 1775, p. 138, Taf. XXXIX A, (nec Linn.).

Lemur rufifrons Bennett, Proc. Zool. Soc. Lond., 1833, p. 106; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 269; V, 1855, p. 145; van d. Hoev., Tijdsch. Naturw. Geschied., XI, 1844, p. 38; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wiss. Wien, 1870, p. 63; Bartl., Proc. Zool. Soc. Lond., 1879, p. 768.

Prosimia rufifrons Less., Spec. Mamm., 1840, p. 230; Gray, Proc. Zool. Soc. Lond., 1863, p. 138; 1872, p. 852; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 74; *Id.* Ann. Mag. Nat. Hist., VII, 4th Ser., 1871, p. 339.

Lemur mongos var. *rufifrons* A. Milne-Edw. et Grandid., Hist. Nat. Madag., Mamm., Atl., II, 1890, pls. CXXXVIII, CXXXIX, CXLIV.

Lemur mongos rufifrons Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 544, Zool. Ser.

RED-FRONTED LEMUR.

Type locality. Unknown. Type specimen then living in the garden of the Zoological Society.

Geogr. Distr. West coast of Madagascar from Cape St. Vincent on the south to Baly on the north.

Genl. Char. Male with top of head between ears rufous; that of female grizzly black.

Color. Male. Top of head between ears and patch beneath ears deep rufous; center of forehead and nose black; spots above and in front of eyes, and cheeks, whitish; outer side of limbs, hands and feet, and under part of body pale rufous; upper part of body grizzled gray washed with rufous; hands light brown; feet dark brown; tail blackish on apical half, then rufous, brightest and deepest towards root, and blackish at root. Ex type in British Museum.

Female. Top of head grizzled; patch around eyes grayish white; upper part of body and outer side of limbs grizzly brown; under side of limbs, and body beneath pale rufous; deeper along sides of abdomen and at vent.

Measurements. Skull: total length, 87.3; occipito-nasal length, 85; intertemporal width, 31.6; zygomatic width, 47.7; median length of nasals, 25.9; length of upper molar series, 28.6; length of mandible, 60; length of lower molar series, 32.3.

LEMUR RUBRIVENTER I. Geoffroy.

Lemur rubriventer I. Geoff., Compt. Rend., XXXI, 1850, p. 876; *Id.* Cat. Primates, 1851, p. 71; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 142; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., Fasc. I, 1856, pp. 214, 218; Schleg., Neder. Tijdsch. Dierk., III, 1866, p. 75; *Id.* Mus. Pays-Bas, Simiæ, 1876, p. 311; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 638; Milne-Edw. et Grandid., Hist. Nat. Madag., 1890, Atl., II, pls. CLXVIII, CLXX; Major, Proc. Zool. Soc.

Lond., 1899, p. 554; 1901, p. 263; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 544, Zoöl. Ser.

Lemur flaviventer I. Geoff., Compt. Rend., XXI, 1850, p. 876; *Id.* Cat. Primates, 1851, p. 72; Gerv., Hist. Nat. Mamm., I, 1854, p. 167, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., 1856, fasc. I, pp. 214, 218, 220; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 629; A. Milne-Edw. et Grandid., Hist. Nat. Madag., 1890, Atl., II, pl. CXCI.

Prosimia rufipes Gray, Ann. Mag. Nat. Hist., VII, 4th Ser., 1871, p. 339; *Id.* Proc. Zool. Soc. Lond., 1872, pl. 69.

Lemur rufipes Forbes, Handb. Primates, I, 1894, p. 72.

RED-BELLIED LEMUR.

Type locality. Madagascar. Type in Paris Museum.

Geogr. Distr. Eastern coast of Madagascar from Tenerifa to Fort Dauphin. Ampitambe, N. E. Betsileo, Ambohimitombo, and Ivohimanitra, Tanala country, and Vinanitelo, Southern Betsileo confines of the Tonalas of Ikongo. (Forsyth-Major).

Genl. Char. Outside of ears, and inner side of margins haired, rest naked. Iris dark yellow. (Forsyth-Major).

Color. Male. Line from forehead, top of nose and lips maroon; head above mixed dark brown and buff; sides of head coppery red; body above chocolate brown, palest on rump; arms, under parts from chin, and inner side of limbs coppery red; outer side of hind limbs to ankles reddish buff; hands and feet coppery red; tail maroon at base; blackish maroon for remainder of length. Ex type Paris Museum.

The colors, especially on lower back and legs have probably faded. An example in the British Museum differs somewhat as will be noticed in the following description.

Line from forehead, top of nose and muzzle black, or blackish maroon; head and cheeks reddish brown; upper part of body speckled black and reddish, becoming in some individuals, almost black on dorsal line; limbs, hands and feet, and under side of body reddish brown; tail black.

Female. The sexes differ in coloration only in that the throat and upper part of breast of the female is white, and the under parts of the body are pinkish buff.

Measurements. Total length, 711.2; tail, 407.6; foot, 102.8. Skull: occipito-nasal length, 83; Hensel, 35; zygomatic width, 34; intertemporal width, 29; median length of nasals, 21; palatal length, 35; length of upper molar series, 30; width of braincase, 39; length of mandible, 60; length of lower molar series, 33.

LEMUR RUFUS E. Geoffroy.

Lemur rufus E. Geoff., Cat. Mamm., 1803, p. 34; *Id.* Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 160; Less., Man. Mamm., 1827, p. 67; van d. Hoev., Tijdsch. Natur. Geschied., 1844, p. 36; I. Geoff., Cat. Primates, 1851, p. 72; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 144; Gerv., Hist. Nat. Mamm., I, 1854, p. 167; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., 1856, fasc. I, pp. 216, 219, pl. VIII, figs. 31, 31a, 31b; Fitzing., Sitzungsb. Metth. Naturw. Akad. Wiss. Wien, 1870, p. 647; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 76.

Prosimia ruffo Less., Spec. Mamm., 1840, p. 223.

Lemur collaris rufus Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 309, (Part.).

Lemur mongos var. *rufus* A. Milne-Edw. et Grandid., Hist. Nat. Madag., Mamm., Atl., II, 1890, pl. CXLVI.

RED LEMUR.

Type locality. Madagascar. Type in Paris Museum.

Geogr. Distr. Southern Madagascar from the River Tsidsibon to the River Mangonka, 21° 30′. (Schlegel).

Genl. Char. Frontal band and whiskers whitish or yellowish white.

Color. Spot between eyes on forehead, and sides of nose dark reddish brown; top, and sides of head yellowish white; sides of head beneath ears, back of neck, entire upper parts of body, and outer side of arms bright rufous; flanks, and outer side of hind limbs golden; under side of body and inner side of limbs pale golden yellow; hands and feet golden yellow; tail dark rufous with blackish hairs towards tip. Ex co-type in Leyden Museum. Skull in the specimen.

This example is stated to be "un des types du *Lemur rufus* E. Geoff." It is, as the description shows, of a bright rufous color, quite different in appearance from all the other Lemurs. It came from the Paris Museum in 1815.

The type of *Lemur rufus* Geoffroy, is in the Paris Museum but in a very dilapidated condition. In fact, excepting the hind neck and dorsal region, there is very little color remaining, and the specimen or co-type in the Leyden Museum is in a much better state.

As near as it can be given, the following is a description of this type.

Color. Nose on top and on sides black; a narrow line from occiput over center of head broadening out on forehead and between eyes black, tinged with brown; on each side of this on top of head, and on sides in front of ears white or yellowish white; beneath ears, hind neck, and upper parts of body, and shoulders, deep ochraceous buff with a reddish tinge; arms much discolored, but seem to be paler than back until halfway on forearms where they are like the upper parts to wrists and hands; outer side of legs and flanks pale golden yellow; feet so discolored with the dust of years, nearly a century, that it is impossible to tell with certainty what was the original color, but from one or two places that show a little color, it would seem to have been like that on the back; under parts and inner side of limbs pale golden yellow, possibly, originally a rich golden yellow; tail mostly denuded of fur, and what remains is black with dust, but probably in the life of the animal it was like the back, reddish and ochraceous buff.

Measurements. Total length, 915.67; tail, 458.37; foot, 101.60. Ex type Paris Museum. Skull in specimen.

LEMUR ALBIFRONS E. Geoffroy.

Lemur albifrons E. Geoff., Mag. Encyclop., 1796, I, p. 20; Audeb., Hist. Nat. Singes et Makis, 1797, p. 13, pl. III; Shaw, Genl. Zool., I, 1800, p. 113; E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 160; F. Cuv., Hist. Nat. Mamm., 1819, Livr. III, p. 1, pl. I; Less., Man. Mamm., 1827, p. 67; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 19, 11me Leçon; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 271; V, 1855, p. 144; Blainv., Ostéog., 1841, Atl., Lemur, pl. VI; van d. Hoev., Tijdsch. Natur. Geschied., XI, 1844, p. 36, pl. I, fig. 3; I. Geoff., Cat. Primates, 1851, p. 72; Gerv., Hist. Nat. Mamm., I, 1854, p. 167, fig.; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 214, 218; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 628; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 310; Anders., Cat. Mamm. Ind. Mus. Calc., 1881, Pt. I, p. 92; Forbes, Handb. Primates, I, 1894, p. 73; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 544, Zool. Ser.

Prosimia albifrons Less., Spec. Mamm., 1840, p. 230; Gray, Proc. Zool. Soc. Lond., 1863, p. 137; 1872, p. 852; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 73.

Prosimia frederici Less., Spec. Mamm., 1840, p. 232.

Lemur mongos var. *albifrons* A. Milne-Edw. et Grandid., Hist. Nat. Madag., 1890, Atl., II, pls. CXXXVI, CXLIV.

WHITE-FACED LEMUR.

Type locality. Madagascar. Type not in Paris Museum.

Geogr. Distr. Eastern coast of Madagascar from Masindrano on the south to Bay of Antongil on the north.

Genl. Char. Greater part of head white.

Color. Male. Forehead, cheeks, temples, back of head and ears white; face from above eyes, and nose black; upper part of body, and outer side of limbs dark brown, each hair tipped with bright pale rufous, giving the fur a speckled appearance; entire under parts, and inner side of limbs whitish gray; hands and feet like outer side of limbs; basal half of tail like the back, apical half black.

Female. Paler than the male, and the white seen on the head of the male, is dark gray on the female.

Measurements. Similar in size to L. FULVUS. Skull: occipito-nasal length, 84; Hensel, 75; zygomatic width, 49; intertemporal width, 27; median length of nasals, 31; palatal length, 37; length of upper molar series, 28; width of braincase, 38; length of mandible, 57; length of lower molar series, 31.

This is a large Lemur, easily distinguished from all others by having the head from the eyes to behind the ears, and the cheeks white. The type, if it ever was in the Paris Museum, has disappeared. On plate XIII of the Cimelia Physica J. F. Miller has figured an animal with a heart shaped white spot on the forehead, and described by Shaw as having the "upper part of the neck and back, hind part of the thighs and tail black; the under part of the neck and body and the limbs white. On the forehead is a large heart-shaped spot pointing downward." To this figure Gmelin, (l. c.) gave the name of *bicolor*. It has been suggested by Shaw and others that perhaps this creature is the same as LEMUR ALBIFRONS Geoffroy, but excepting the white on the forehead it bears no resemblance whatever to Geoffroy's species. and the restricted area of white on the head is very unlike the almost entirely white head of L. ALBIFRONS. Miller's animal is apparently adult, and does not seem to be in a state where the color of the pelage is changing to something else, and this condition, moreover, is not habitual with the Lemurs, as the young usually closely resemble the adults. L. ALBIFRONS is not common in collections, and it cannot be said that it is at all well known in so far as its appearance at all ages is concerned, but with the knowledge that we have at present, it would be very unwise to reduce Geoffroy's name to a synonym in favor of that bestowed by Gmelin to an animal he probably had never seen, and which has no representative in any collection. Miller's example should more properly be assigned a place among those quasi species deemed indeterminable.

LEMUR CINEREICEPS Milne-Edwards and Grandidier.

Lemur mongos var. *cinereiceps* Milne-Edw. et Grandid., Hist. Nat. Madag., Mamm., Atl., II, 1890, pls. CXL, CXLVII, (desc. nulla).

Lemur cinereiceps Forbes, Handb. Primates, I, 1894, p. 72.

GRAY-HEADED LEMUR.

Type locality. Unknown.

Geogr. Distr. Madagascar.

Genl. Char. Hands and feet bright rufous red; head gray.

Color. Top of head, face and ears gray; rest of pelage, body, limbs, hands, feet, and tail bright rufous red.

The type of this form was not in the Paris Museum although a diligent search was made for it, and I could not therefore give a description from the example, nor take any measurements.

No description was ever published so far as I have been able to learn, except the short one in Forbes, (l. c.) and all we know of the form, is the figure in the work above cited. Whether or not a figure alone is sufficient (no matter how well colored it may be) to establish a species, naturalists are not yet in accord, and as the above brief description was taken from the plate, it may not be sufficient to make amends for former lapses. The plate exhibits a figure of an apparently distinct animal.

LEMUR MACACO Linnæus.

Lemur macaco Linn., Syst. Nat., I, 1766, p. 44; Erxl., Syst. Reg. Anim., 1777, p. 67; Gmel., Syst. Nat., I, 1788, p. 43; Shaw, Genl. Zool., I, 1800, p. 98; Fisch., Anat. Maki, 1804, p. 11; Less., Man. Mamm., I, 1827, p. 66; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 18, 11me Leçon; Blainv., Ostéog., 1841, Atl., Lemur, III; van d. Hoev., Tijdsch. Nat. Geschied., XI, 1844, p. 55; Schleg., Nederl. Tijdsch. Dierk., III, 1866, p. 77; Schleg. et Pollen, Faun. Madag., I, 1868, p. 1, pl. I, ♀, et juv.; Sclat., Proc. Zool. Soc. Lond., 1874, pp. 229, 230; 1872, p. 853; 1885, p. 672, fig.; Anders., Cat. Mamm. Ind. Mus. Calc., Pt. I, 1881, p. 91; Bedd., Proc. Zool. Soc. Lond., 1904, pp. 161, 162, fig. 14, (Brain).

Lemur macaco niger Schreb., Säugth., I, 1775, p. 142, pl. XL A.

Lemur niger Shaw, Genl. Zool., I, 1800, p. 112; E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 259; *Id.* Cours Hist. Nat. Mamm., 1828, p. 19, 11me Leçon; Fitzing., Sitzungsb. Metth., Natur. Akad. Wiss. Wien, 1870, p. 629; Gray, Proc. Zool. Soc. Lond., 1872, p. 853; A. Milne-Edw. et Grandid., Hist. Nat. Madag., Atl., II, 1890, pl. CXXX.

Prosimia macaco Bodd., Elench. Anim., 1784, p. 165; Less., Spec. Mamm., 1840, p. 252.

Lemur leucomystax Bartl., Proc. Zool. Soc. Lond., 1862, p. 347, pl. XLI; Gray, Proc. Zool. Soc. Lond., 1863, p. 136; 1872, p. 853, ♀.

Varecia nigra Gray, Proc. Zool. Soc. Lond., 1863, p. 136.

Varecia varia var. 6, Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 70.

BLACK LEMUR. Native name *Acoumba,* (Schlegel and Pollen).

Type locality. Madagascar.

Geogr. Distr. North west Madagascar from Ifassy to Manaharana.

Genl. Char. Tufts of ears continuing downward to angle of mouth.

Color. Male. Usually entirely black, but there is considerable variation among individuals. Iris yellow or brownish orange; pupil small, black.

Female. Face, nose and back of head black; forehead grizzled gray; whiskers long; ear tufts white; upper parts rich ferruginous brown, darkest on middle of back; arms, legs, and neck yellow tinged with red; under parts, and inner side of limbs cream yellow; hands and feet reddish yellow; tail white or yellowish white. Considerable variation exists among individuals and some have the top and back of head gray or whitish, and the tail rich ferruginous like the middle of back.

Measurements. Skull: occipito-nasal length, 101; Hensel, 86; zygomatic width, 59; palatal length, 47; intertemporal width, 31; median length of nasals, 37; length of upper molar series, 36; length of mandible, 71; length of lower molar series, 41.

LEMUR NIGERRIMUS Sclater.

Lemur nigerrimus Sclater, Proc. Zool. Soc. Lond., 1880, p. 451, fig. 2; Milne-Edw. et Grandid., Hist. Nat. Madag., Mamm., Atl., II, 1890, pls. CLIV, CLV; Forbes, Handb. Primates, I, 1894, p. 73.

Lemur macaco Sclat., Proc. Zool. Soc. Lond., 1878, p. 1016, (nec Linn.).

BLACK LEMUR.

Type locality. Unknown. Type in Paris Museum.

Geogr. Distr. North western Madagascar, Cape Ambre to Ifassy.

Genl. Char. Face hairy, except nose pad and lips, which are naked; ears naked. Iris "greenish blue." (A. Milne-Edwards in Litt.).

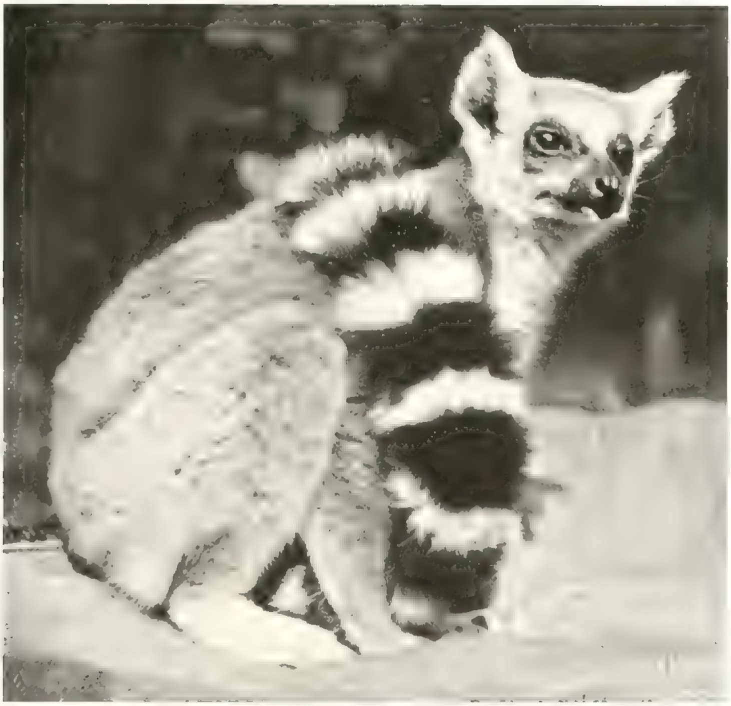
Color. Male. Face black; head, neck, fore part of body from middle of back, and arms black glossed with maroon; rest of body above, hind limbs, and feet, maroon; hands black; under parts of body reddish brown; inner side of limbs maroon; tail black tinged with reddish beneath; iris green. Ex type in Paris Museum.

Measurements. Skull: occipito-nasal length, 85; Hensel, 77; zygomatic width, 53; intertemporal width, 32; width of braincase, 37; palatal length, 39.5; median length of nasals, about 24; length of upper molar series, 26; length of mandible, 64; length of lower molar series, 34.

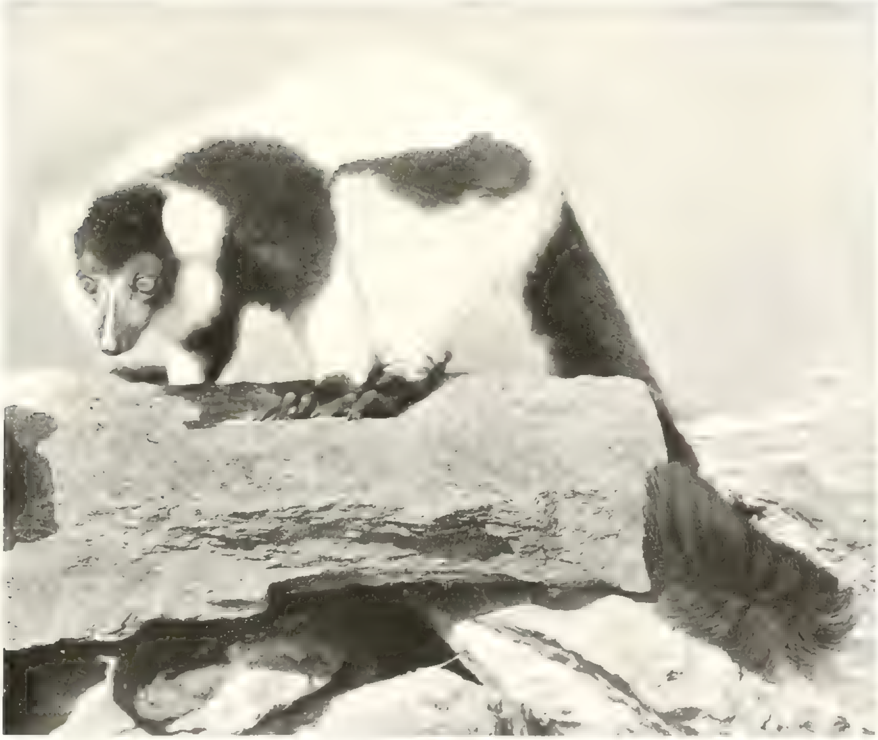
The type of this form was purchased by the Paris Museum from the Zoological Society of London, the skull, however, is in the British Museum. It is a large animal, and may possibly be a melanism of L. RUFUS or L. FULVUS, or a male of some species of the L. MACACO style. The fact that nothing is known of its habitat, or whence the specimen came, makes it difficult to form an opinion upon its specific value, and we are therefore compelled, for the present, to keep it separate from the other species of the genus.

LEMUR CATTA Linnæus.

Lemur catta Linn., Syst. Nat., I, 1758, p. 30; I, 1766, p. 45; Schreb., Säugth., I, 1775, p. 143, tab. XXI; Erxl., Syst. Reg. Anim., 1777, p. 68; Gmel., Syst. Nat., 1788, p. 43, No. 4; Shaw, Genl. Zool., 1800, p. 103, pl. XXXV; Fisch., Anat. Maki, 1804, p. 17; Less., Man. Mamm., 1827, p. 66; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 18, 11me Leçon; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 266; V, 1855, p. 142; van der Hoeven, Tijdsch. Natur. Geschied., XI, 1844, p. 32; I. Geoff., Cat. Primates, 1851, p. 70; Gerv., Hist. Nat. Mamm., I, 1854, p. 165; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 214, 215; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 72; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 314; G. A. Shaw, Proc. Zool. Soc. Lond., 1879, p. 132; Bartl., Proc. Zool. Soc. Lond., 1879, p. 768; Anders., Cat. Mamm. Ind. Mus. Calc., 1881, Pt. I, p. 90; Bedd., Proc. Zool. Soc. Lond., 1887, p. 371, fig. 3; 1900, pp. 135, 160; A. Milne-Edw. et Grandid., Hist. Nat. Madag. Mamm., Atlas,



Lemur catta



Lemur variegatus.

II, 1890, pls. CLXVII, CLXXII; Forbes, Handb. Primates, I, 1894, p. 77; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1806, p. 545, fig. LXXVI; Pocock, Proc. Zool. Soc. Lond., 1906, p. 124, fig. 48.

Prosimia catta Bodd., Elench. Anim., 1784, p. 65; Less., Spec. Mamm., 1840, p. 223; Thos., Proc. Zool. Soc. Lond., 1911, p. 129.

Le mococo F. Cuv., Hist. Mamm., 1824, Vme Livr. pl. 2me ed., 1833, pl. XVII.

RING-TAILED LEMUR.

Type locality. Madagascar.

Geogr. Distr. South, and southwestern borders of Betsileo Province, Central Madagascar. Province Anossi, (Schlegel and Pollen).

Genl. Char. Prominent spur in old males on forearm above wrist; comb-like growth, in females and young, continuous with palm of hand by a hairless skin; near this is a gland surrounded by stiff hairs; tail long, conspicuously banded.

Color. Top of head grizzled white and black; neck, shoulders and back to rump and sides of body fawn, hairs tipped with white; a black band from cheeks to shoulders; outer side of limbs and rump pearl gray; inner side of limbs, and under part of body white; hands gray like arms; feet white; ears white; tail banded with numerous rings alternately black and white, tip black.

Measurements. Skull: occipito-nasal length, 75; Hensel, 70; zygomatic width, 45.5; intertemporal width, 15; width of braincase, 39; palatal length, 35; median length of nasals, 21; length of upper molar series, 27; length of mandible, 53; length of lower molar series, 30.

This is the most beautiful of all the Lemurs, the soft, delicate coloring of the body, with the strongly contrasted rings on the long tail, easily enabling the species to exceed all others in the attractiveness of its appearance. Of course it would be a conspicuous object anywhere, and when met with in the localities it frequents, the traveller's attention would be at once arrested, and the following statement of its habits was given by one of its fortunate observers, Mr. George A. Shaw in the Proceedings of the London Zoological Society (l. c.). He says that in his seven years' experience of the species the animals were found only in the south and south western part of Betsileo Province. This province is on the center table land from 100 to 250 miles south of Antananarivo, the capital, and extends for 150 miles with a width of 50 to 60 miles. The eastern side is covered with forest, fringing the table land, and covering the slopes into the lowland bordering the sea. The Lemurs dwell among the rocks in the south and southwest portion, and are not arboreal. Their hands (hands and feet?) have long, smooth, level and leather like palms which give them a firm footing on the wet, slippery rocks, over which they easily travel, as a fly does on a pane of glass, and people, although barefooted, are unable to follow them. The thumbs are smaller in proportion to those of the forest Lemurs, whose fingers are suitable for grasping as they spring from tree to tree, rarely descending to the ground except for water. There are very few trees where the Ring-tailed Lemurs live, and these are stunted and bushy. These Lemurs have two long upper fangs, longest in the males, and with these they take away the outer coating of the prickly pear which is full of fine spines, and which forms their principal food, as it grows abundantly in the crevices and around the foot of the rocks. In summer they feed on various kinds of wild figs and bananas. The fangs, (canines), are doubtless used for self defence, although when fighting they depend chiefly on their hands, with which they scratch and strike, and a male has been seen to whip a dog larger than itself by these means. They are very easily tamed, and will eat almost any kind of fruit, but no cooked meat; cooked rice however, they can be induced to eat. They do not drink in the wild state, as is proved by native statements, and from the fact of their abstaining for a month or more when in captivity, and living on bananas during that period. The Lemurs living on the west, including two species of white Lemurs, (PROPITHECUS), subsist without water, but those on the east invariably drink when feeding.

There is no difference in appearance between the sexes.

LEMUR VARIEGATUS Kerr.

Lemur macaco variegatus Kerr, Anim. Kingd., 1792, p. 86, No. 98.

Lemur macaco (nec Linn.), Schreb., Säugth., 1775, pl. XLB; Audeb., Hist. Nat. Singes et des Makis, 1797, p. 16, pls. V, VI; Shaw, Genl. Zool., I, 1800, p. 112; E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 159; Desm., Mamm., 1820, p. 87; Fisch., Syn. Mamm., 1829, p. 75; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 266; V, 1855, p. 142; Gerv., Hist. Nat. Mamm., I, 1854, p. 166.

Lemur varius I. Geoff., Cat. Primates, 1851, p. 7; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 213, 217; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 301; Anders., Cat. Mamm. Ind. Mus. Calc., 1881, p. 91, Pt. I; A. Milne-Edw. et Grandid., Hist. Nat. Madag., 1890, Atl., II, pls. CXXIII, CXXIX; Forbes, Handb. Primates, I, 1894, p. 68; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 543, Zool. Ser.

Maki-vari Coquer., Rev. Mag. Zool., 1859, p. 462.

Varecia varia Gray, Proc. Zool. Soc. Lond., 1863, p. 136; 1872, p. 853; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 70, fig.

Lemur macaco griseo-maculatis Fitzing., Sitzungsb. Metth. Nat. Akad. Wiss. Wien, 1870, p. 619.

RUFFED LEMUR.

Type locality. Madagascar.

Geogr. Distr. North eastern Madagascar from Adenpone to Cape Masoala at the entrance of Antongil Bay, and into the interior to Bengoa.

Genl. Char. Color black and white, and variable in the extreme in the arrangement; apparently purely individual. Tail thick, long; ears hidden in fur; chin naked; coat thick and woolly.

Color. Excessively variable. Possibly the most usual style has the nose black on top, the sides covered with short yellowish white hairs; cheeks, forehead, top of head, neck, upper back, arms to elbows, wrists, outer edge of thighs, ankles, inner side of limbs, under parts, hands, feet and tail black; rump, flanks, outer side of thighs, and legs to ankles white. In some examples there is a white collar around the neck beneath the head, and the hind neck is white down to the lower back, and this is often tinged with orange or deep buff; but the extent and distribution of these two colors varies so greatly that it is practically impossible to find two individuals alike.

Measurements. Skull: occipito-nasal length, 99; Hensel, 89; zygomatic width, 59; intertemporal width, 40; palatal length, 44; medium length of nasals, 31; length of upper molar series, 30; length of mandible, 39; length of lower molar series, 35.

Coquerel states, (l. c.) that this animal is considered sacred by the natives of Tamatave, and they say it worships the sun, and prays to it every morning. This idea doubtless comes from a habit this Lemur has in common with the Mococo. An individual of this species which he had in captivity, at the first rays of the sun appearing sat up on its hind legs and remaining erect, would open and extend the arms holding them in this position while looking at the sun, as if its vivifying influence would by this action be received within itself. One, seeing Lemurs in European menageries, would obtain no idea of the activity they display in their native wilds, or of the grace of their movements and their incredible agility in the Madagascar forests, as they launch themselves from branch to branch with astonishing precision, and pass from tree to tree in prodigious leaps.

LEMUR VARIEGATUS RUBER E. Geoffroy.

Lemur ruber E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 159; *Id.* Cours Hist. Nat. Mamm., 1828, p. 19, 11me Leçon; Less., Man. Mamm., 1827, p. 66; F. Cuv., Hist. Nat. Mamm., 1833, p. 219, pl. LXXX; Wagn., Schreb., Säugth. Suppl., I. 1840, p. 272; V, 1855, p. 142; van d. Hoev., Tijdsch. Natur. Geschied., XI, 1844, p. 34; I. Geoff., Cat. Primates, 1851, p. 71; Gerv., Hist. Nat. Mamm., I, 1854, p. 166, pl. X; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 213, 219; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 636; Gray, Proc. Zool. Soc. Lond., 1872, p. 853; Forbes, Handb. Primates, I, 1894, p. 69, pl. VII.

Prosimia erythromela Less., Tabl. Reg. Anim., 1842, p. 10.

Varecia ruber Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 71.

RED-RUFFED LEMUR. Native name *Varikossi.*

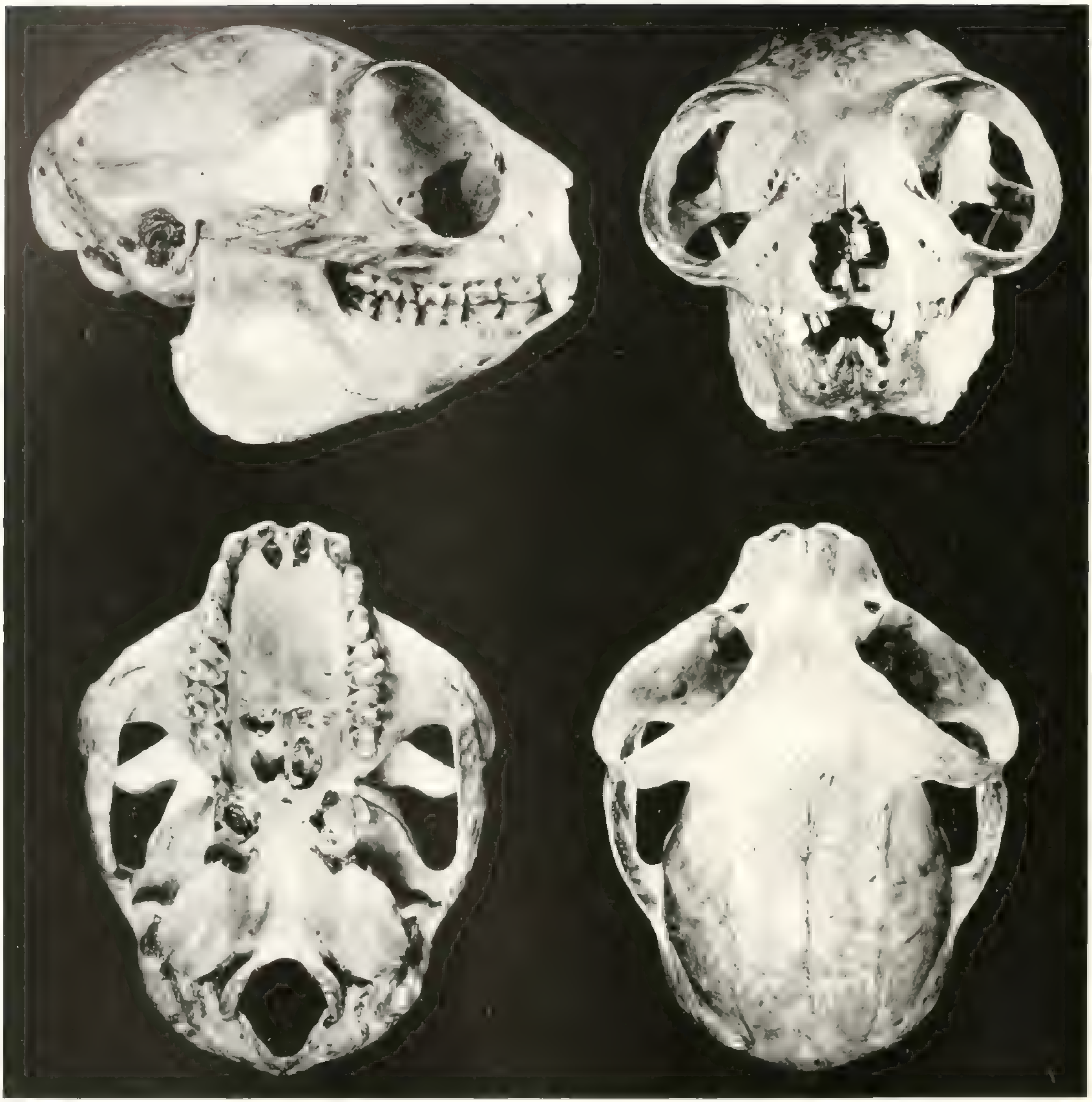
Type locality. Madagascar. Type not found in Paris Museum.

Geogr. Distr. Eastern Madagascar, from Bay of Antongil in the north to Masindrano in the south.

Color. Back of neck and circle around ankles white; ruff, rusty or orange red; upper part and sides of body, and outer side of limbs rusty red; under parts, and inner side of limbs and tail, black. Variations from this style are frequently seen, but the predominant color is usually some shade of red.

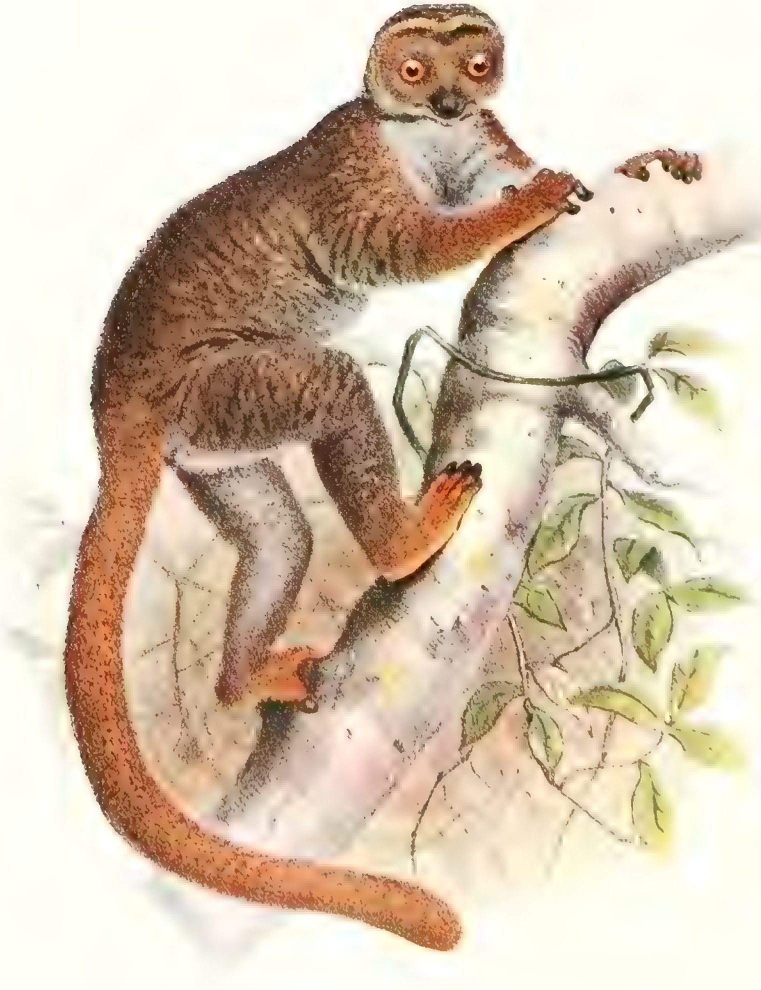
Measurements. Size same as L. VARIEGATUS. Skull: occipito-nasal length, 99; Hensel, 85; zygomatic width, 59; intertemporal width, 34; median length of nasals, 33; length of upper molar series, 36; length of mandible, 70; length of lower molar series, 32.

This handsome variety of LEMUR VARIEGATUS apparently ranges to the south of that species on the eastern coast of Madagascar, the two forms meeting at the Bay of Antongil. While exhibiting sundry styles of different colorations, it is not subject to such extreme variations as those shown by its relatives. Its bright color gives it a very gay and attractive appearance, even more striking than that of the strongly contrasted hues of L. VARIEGATUS. No especial records have been given of the habits of this form, but it is not supposed that they differ in any degree from those of its relative.



LICHANOTUS LANIGER.

No. 15123 Brit. Mus. Coll. [illegible] Enlarged from Nat. Size



Lichanotus laniger

Subfamily 4. Indrisinæ.

GENUS LICHANOTUS. THE AVAHI.

$$\text{I. } \frac{2-2}{1-1}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 30.$$

LICHANOTUS Illig., Prodr. Syst. Mamm. et Avium, 1811, p. 72. Type *Lemur laniger* Gmelin.

Avahi Jourd., L'Instit., II, 1834, p. 231.

Microrhynchus Jourd., Thèse inaug. Faculté Scien. Grenoble, 1834, (nec Megerle, 1823, Coleopt.).

Habrocebus Wagn., Schreb., Säugth. Suppl., I, 1840, pp. IX, 257, (Part.).

Semnocebus Less., Spec. Mamm., 1840, p. 207.

Iropocus Glog., Hand. u. Hilfsb. Naturg., I, 1841, pp. XXVIII, 43, 44.

Fur woolly; head almost round; nose not elongate, hairy; face naked; nostrils opening into a cavity below the skin; ears small, hidden in fur; tail longer than body; third, fourth and fifth fingers flattened; third and fourth toes united by a membrane up to the first joint. Skull: braincase rounded, rather high; orbits very large; upper incisors small, outer ones the larger; canines short; premolars with an outer cingulum, and no interior cusp; molars four cusped. Inner lower incisors more slender than the outer; anterior and posterior molars with five cusps; palate reaching to middle of last molar; *os centrale* of wrist wanting; fourth finger and toe longest.

Lichanotus laniger (Gmelin).

Lemur laniger Gmel., Syst. Nat., I, 1788, p. 44; Cuv., Tabl. Element. Mamm., 1798, p. 101; Shaw, Genl. Zool., I, 1800, p. 99, pl. XXXIV; Fisch., Anat. Maki, 1804, p. 16; Griff., Anim. Kingd., V, 1827, p. 125; van d. Hoev., Tijdsch. Natur. Geschied., 1844, p. 27.

Lemur brunneus Link, Beytr. Natur., 2nd Pt., 1795, p. 165.

Indris longicaudatus E. Geoff., Ann. Mus. Hist. Natur. Paris, XIX, 1812, p. 158; Desm., Nouv. Dict. Hist. Nat., XVI, 1817, p.

171; *Id.* Mamm., 1820, p. 97; Less., Man. Mamm., 1827, p. 65; Lenz, Nat. Säugeth., 1831, p. 35.

Microrhynchus laniger Jourd., Thèse inaug. Facul. Scien. Grenoble, 1834, II, p. 231; Coquerel, Rev. Mag. Zool., 1859, p. 461; Gray, Proc. Zool. Soc. Lond., 1863, p. 141; Mivart, Proc. Zool. Soc. Lond., 1866, p. 151, pl. XV; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, pp. 90, 136; Bartl., Proc. Zool. Soc. Lond., 1879, p. 769.

Indris laniger A. Smith, S. Afr. Quart. Journ., II, 1835, p. 27; Mivart, Proc. Zool. Soc. Lond., 1867, p. 256; 1873, pp. 484, 494-497.

Avahis laniger Less., Compl. Buff., I, 1838, p. 294; I. Geoff., Cat. Primates, 1851, p. 69; Gerv., Hist. Nat. Mamm., I, 1854, p. 164, pl. VII; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 202; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 290.

Lichanotus laniger Illig., Prodr. Syst. Mamm. Av., 1811, p. 72; Blainv., Ostéog. Mamm., Primates, 1841, p. Atl., pl. VIII, Lemur.

Semnocebus avahi Less., Spec. Mamm., 1840, p. 210; *Id.* Suppl. Buff., 1847, p. 103.

Lichanotus avahi van d. Hoev., Tijdsch. Natur. Geschied., 1844, p. 44, pl. I, fig. 6, pl. III; *Id.* Die Säugeth., 1855, p. 1024.

Habrocebus lanatus Schinz, Syn. Mamm., 1844, p. 115; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 258, tab. XLII A; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 603.

Lemur lanatus Schleg., Handb. tot der Dierk., I, 1857, p. 19.

WOOLLY AVAHI. Native name *Ovandros, Ampongui.*

Type locality. Madagascar.

Geogr. Distr. Eastern coast of Madagascar, and the Bay of Passandava on the west coast. St. Mary's Island, (Coquerel).

Color. Face covered with russet hairs, nose pad naked; a buff band across forehead, anterior to which is a blackish band; top of head and neck blackish brown, hairs white tipped; ears and patch beneath tawny black; shoulders, and upper parts of back tawny, tips of hairs paler, their bases slate; tips of hairs on lower back, and outer side of legs buff; patch on rump buff; upper parts washed with ochraceous; under parts, and inner side of limbs dark gray; hands dark reddish; feet reddish; tail bright dark cinnamon rufous.

Measurements. Skull: occipito-nasal length, 49; Hensel, 38; zygomatic width, 37; intertemporal width, 21; median length of nasals, 9; breadth of braincase, 26; length of upper molar series, 17; length of mandible, 32; length of lower molar series, 18.

This curious little animal, with a coat much resembling wool, is strictly nocturnal in its habits, sleeping during the day. It is arboreal, and inhabits the forests on the eastern coast of Madagascar, and along the Bay of Passandava on the west coast. Examples from the north western part are smaller and of a lighter color. Coquerel (l. c.) states that this animal is found in the great forest of Tsasifout on the Island of St. Mary and is known to the natives by the name *Ampongui*. It is more decidedly nocturnal than the true Lemurs and a more stupid animal.

GENUS PROPITHECUS. SIFAKAS.

$$\text{I. } \frac{2-2}{1-1}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 30.$$

PROPITHECUS Bennett, Proc. Zool. Soc. Lond., 1832, p. 20. Type *Propithecus diadema* Bennett.

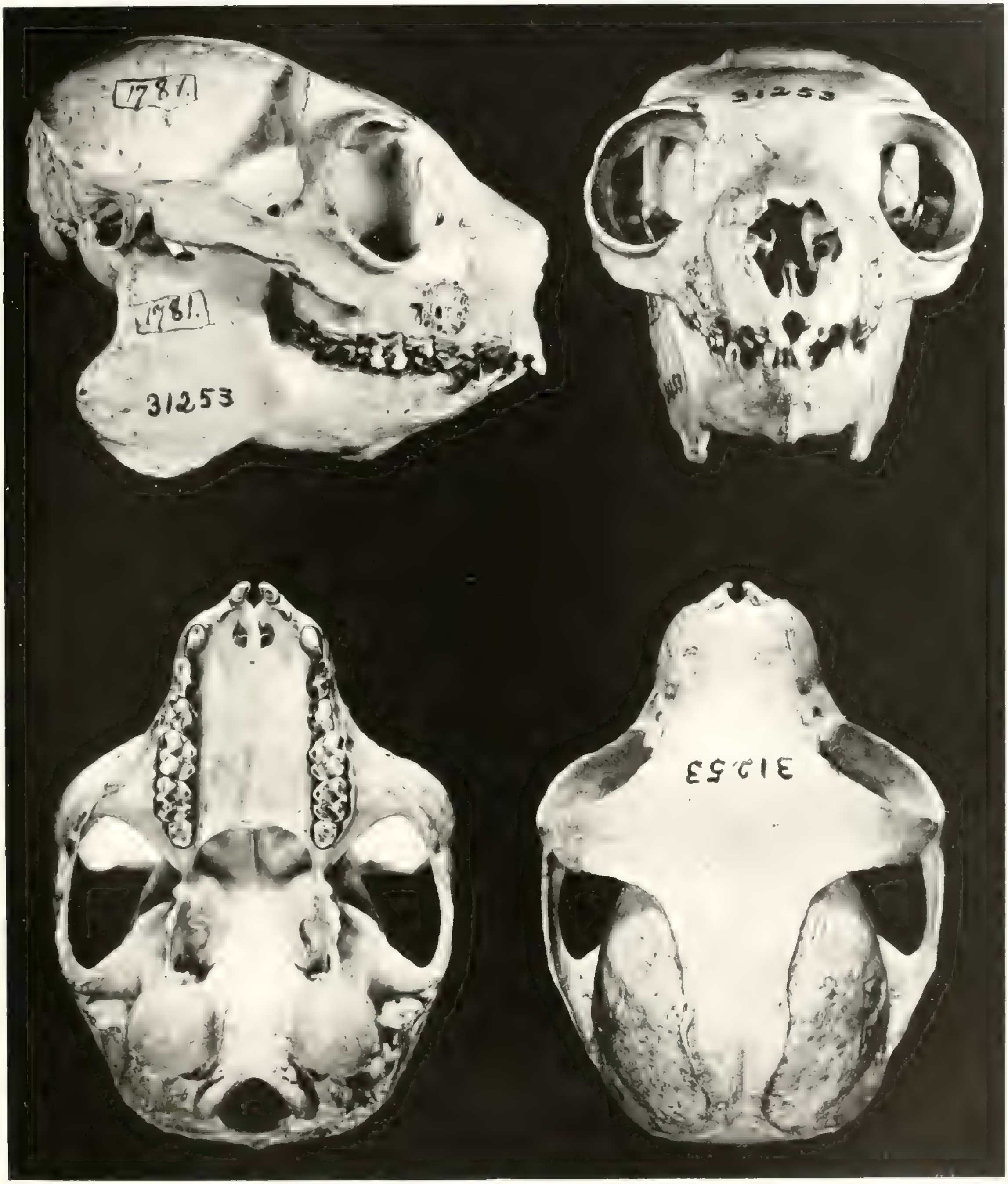
Macromerus A. Smith, S. Afr. Quart. Journ., 2nd Ser., 1833, p. 49, (nec Schonherr, 1826, Coleopt.).

Habrocebus Wagn., Schreb., Säugth. Suppl., I, 1840, pp. IX, 257.

Head longer than broad; muzzle black, naked; ears partly concealed in the fur, hairy; tail long; index finger not united to the others. Between the arms and the body is a fold of skin. Skull: upper incisors protruding, the inner pair approximating and longer than outer; braincase high; diastema between upper canines and premolars; lower molars quadricuspidate.

The Sifakas, as these rather handsome animals are called, are remarkable for their wonderful diversity of coloration.

As now restricted only two species are recognized, each having several subspecies, which are only met with in certain localities apart from their species. The color is usually white varied with yellowish, red, or black markings. Sometimes black phases occur when the entire pelage is of that hue. The animals are only found in Madagascar, and very little has been recorded of their habits. They are dwellers of many parts of the Island, and are not confined to the forests, but are met with in the arid tracts, and on the plains where trees are infrequent. Albino individuals are found, mostly belonging to the *P. v. deckeni* variety, a form that exhibits very great diversity of color and pattern among individuals. In fact examples of most of the forms vary so much in this respect that many descriptions would be necessary to make them recognizable, and enable one, not familiar with the group, to attribute the examples to their proper place among the different accepted forms. The Sifakas are venerated and never killed by the natives of Madagascar. They are inoffensive animals, going about in troops of half a dozen individuals, and live upon various leaves, fruits and flowers, quite a different diet from that of other species of Lemurs. During the heat of the day they sleep in some secluded place among the foliage and are active in the early mornings and evenings.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PROPITHECUS DIADEMA.

No. 31253 Amer. Mus. Nat. Hist. Coll. Nat. Size.

LITERATURE OF THE SPECIES.

1832. *Bennett, in Proceedings of the Zoological Society of London*
PROPITHECUS DIADEMA described.

1840. *Wagner, Schreber die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*
PROPITHECUS DIADEMA is here placed in the genus *Habrocebus.*

1867. *Grandidier, in Revue et Magasin de Zoologie.*
PROPITHECUS VERREAUXI described.

1867. *A. Milne-Edwards, in Revue et Magasin de Zoologie.*
Propithecus verreauxi coquereli described as *Propithecus coquereli.*

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, British Museum. Appendix.*
Propithecus verreauxi coquereli redescribed as *Propithecus damonis.*

1870. *Peters, in Monatsberichte Königliche Preussen Akademia der Wissenschaften.*
Propithecus verreauxi deckeni described as *Propithecus deckeni.*

1871. *Grandidier, in Comptes Rendus.*
Propithecus diadema edwardsi described as *Propithecus diadema* var. *edwardsi.*

1871. *A. Milne-Edwards, in Revue des Traveaux Scientifiques.*
Propithecus verreauxi coronatus described as *Propithecus verreauxi* var. *coronatus.*

1872. *Grandidier, in Revue et Magasin de Zoologie.*
Propithecus diadema sericeus described as *Propithecus diadema* var. *sericeus.*

1875. *Gunther, in Annals and Magazine of Natural History.*
PROPITHECUS DIADEMA black phase; described as *Propithecus holomelas.*

1876. *Schlegel, Muséum d'Histoire Naturelle des Pays-Bas, Simiæ.*
In this work the various forms described are all given full specific rank. The species are *P. coquereli* = *P. v. coquereli; P. damanus* = *P. v. coquereli; P. deckeni* = *P. v. deckeni;* P. VERREAUXI; P. DIADEMA; *P. edwardsi* = *P. d. edwardsi;* and *P. holomelas* = P. DIADEMA.

1894. *Rothschild, in Novitates Zoologicæ.*
PROPITHECUS VERREAUXI redescribed as *Propithecus majori.*

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES AND SUBSPECIES.

On the eastern coast of Madagascar, P. DIADEMA ranges from the Bay of Antongil on the north to the Masora River in the south; and *P. d. edwardsi* from the Faraouny to the Masora; and north of Antongil Bay *P. v. sericeus* is found. On the west coast, in the northern part *P. v. coronatus* is met with from the Bay of Mozamba to the Manjaray River, and also for some distance into the interior. Between the southern base of the eastern range of mountains and the River Tsidsibon P. VERREAUXI is found; while *P. v. coquereli* is met with from the north side of Bombetok Bay to the south side of Marendry Bay, the Betsiboka River being its southern limit. In the center of the west coast on the great plains between the Rivers Mananbolo and Manzarayo, *P. v. deckeni* has its range.

KEY TO THE SPECIES AND SUBSPECIES.

- A. Face and nose black.
  - *a.* Body not mostly white.
    - *a.'* Forehead white, back dark gray .... *P. diadema.*
    - *b.'* Forehead black glossed with purple, back chestnut .... *P. d. edwardsi.*
- B. Face black spotted with yellow .... *P. d. sericeus.*
- C. Face and ears black.
  - *a.* Body mostly white.
    - *a.'* Outer side of limbs ashy gray.
      - *a."* Under parts white .... *P. verreauxi.*
      - *b."* Under parts bright rufous .... *P. v. deckeni.*
- D. Face black, nose white.
  - *a.* Outer side of limbs dark maroon .... *P. v. coquereli.*
  - *b.* Outer side of limbs rusty red .... *P. v. coronatus.*

With species, such as these of this genus, which vary from each other in an almost unlimited degree, no key can be constructed to give all the phases of coloration. What may therefore be considered as representing the typical styles has been selected in the descriptions of the different forms embraced in the above key.

PROPITHECUS DIADEMA Bennett.

Propithecus diadema Bennett, Proc. Zool. Soc. Lond., 1832, p. 20; Ogilby, The Naturalist, II, 1837, p. 9; Less., Spec. Mamm., 1840, p. 220; Gray, List Mamm. Brit. Mus., 1843, p. 16; van

d. Hoev., Tijdsch., Nat. Geschied., 1844, pp. 9, 45; I. Geoff., Cat. Mamm., 1851, p. 68; Gerv., Hist. Nat. Mamm., I, 1854, p. 162, pl. VIII; van d. Hoev., Handb. Dierkunde, II, 1855, p. 1042; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 204; Pollen, Nederl. Tijdsch. Dierk., I, 1863, p. 286; Mivart, Proc. Zool. Soc. Lond., 1864, p. 338; Grandid., Rev. Mag. Zool., 1867, p. 313; Fitzing., Sitzungsb. Metth. Natur. Akad. Wiss. Wien, 1870, p. 608; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 90; 1872, p. 847; Bartl., Proc. Zool. Soc. Lond., 1875, p. 62; A. Milne-Edwards et Grandid., Hist. Nat. Madagas., I, 1875, p. 296, pls. I-III; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 296; Anders., Cat. Mamm. Ind. Mus. Calc., Pt. I, 1881, p. 93; Forbes, Handb. Primates, I, 1894, p. 98; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 541.

Macromerus typicus A. Smith, S. Afr. Quart. Journ., 1833, p. 20.

Habrocebus diadema Wagn., Schreb., Säugth. Suppl., I, 1840, p. 260; V, 1855, p. 141; Schinz, Syn. Mamm., 1844, p. 115.

Lichanotus diadema Blainv., Ostéog. Mamm., Primates, 1841, Atl., pl. VIII, (Lemur).

Indrus albus Vinson, Compt. Rend., LV, 1862, p. 829; *Id.* Rev. Mag. Zool., 1862, p. 494.

Indrus diadema Mivart, Proc. Zool. Soc. Lond., 1867, p. 247, pl. XVII, (skull), text figs. 1-3, (skull and teeth).

DIADEMED SIFAKA.

Type locality. Sambava, Northeastern Madagascar.

Geogr. Distr. North east Madagascar between the rivers Lokoy and Bemarivo, (Grandidier).

Genl. Char. Head round, muzzle naked; thumb slender, widely placed from fingers; great toe large, powerful; depression in skull behind orbits.

Color. Forehead white or yellowish white; back of head, neck and narrow dorsal line to middle of back, black; shoulders and back dark gray; rump buff yellow; outer side of arms buff yellow; outer side of legs cream color; sides of body brownish gray; brownish bar across lower part of throat; upper part of throat, chest and abdomen yellowish white; hands black; feet ochraceous buff, the central portion brownish, toes black; tail buff yellow at base, paler in the center and then grayish white to tip. Ex type in British Museum. No skull. In fresh specimens, the arms, legs, and rump at base of tail are orange color.

Measurements. Skull: occipito-nasal length, 92; Hensel, 81; zygomatic width, 64; intertemporal width, 37; palatal length, 36; width of braincase, 49; median length of nasals, 19; length of upper molar series, 31; length of mandible, 72; length of lower molar series, 33. Ex skull of skeleton No. 1533 in British Museum.

PROPITHECUS DIADEMA EDWARDSI Grandidier.

Indris diadema (nec Bennett), Mivart, Proc. Zool. Soc. Lond., 1867, p. 255.

Propithecus diadema var. *edwardsi* Grandid., Compt. Rend., 1871, p. 231; A. Milne-Edwards et Grandid., Hist. Nat. Madag., Mamm., I, 1875, p. 4, pl. III.

Propithecus edwardsi Sclat., Ann. Mag. Nat. Hist., XVI, 10th Ser., 1872, p. 847; Gray, Proc. Zool. Soc. Lond., 1872, p. 847; Bartl., Proc. Zool. Soc. Lond., 1875, p. 63; 1879, p. 769; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 297; Forbes, Handb. Primates, I, 1894, p. 99.

Propithecus bicolor Gray, Ann. Mag. Nat. Hist., 10th Ser., 1872, p. 206.

Propithecus holomelas Gunth., Ann. Mag. Nat. Hist., 4th Ser., XVI, 1875, p. 125; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 297; Bartl., Proc. Zool. Soc. Lond., 1879, p. 769. (Melanistic style).

Propithecus diadema var. *holomelas* A. Milne-Edw. et Grandid., Hist. Nat. Madag., Mamm., I, 1875, p. 4. (Note).

Propithecus diadema holomelas Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 542, Zool. Ser.

MILNE-EDWARDS SIFAKA.

Type locality. Forests in the west of Mananzary. Island of Madagascar, in the interior for the melanistic style *holomelas*. Type of species in Paris Museum; type of *P. holomelas* in British Museum.

Geogr. Distr. Forests of east coast of Madagascar and southern coast from the Masora River to the Faraouny, and the forests of the interior near Fienerentova.

Genl. Char. Face slightly haired. Color various, sometimes melanistic.

Color. Head and neck black glossed with purple; back chestnut, growing paler towards middle of back; lower back white divided by a median brown line; flanks white; arms and hands, and upper surface of thighs black; legs and feet purplish chestnut, rump at root of tail, and inner part of thighs chestnut; inner side of arms, legs, and abdomen burnt umber; chest black; tail black. Ex type in Paris Museum.

The melanistic style has the face, head, neck, back, sides, limbs, hands, feet and tail black; at root of tail a cinnamon rufous spot; entire under parts and inner side of limbs drab washed with mars brown. Ex type *P. holomelas* British Museum.

Measurements. Skull: occipito-nasal length, 84; Hensel, 69; zygomatic width, 59; intertemporal width, 39; palatal length, 31; median length of nasals, 19; width of braincase, 49; length of upper molar series, 28; length of mandible, 60; length of lower molar series, 31.

PROPITHECUS DIADEMA SERICEUS Grandidier.

Propithecus diadema var. *sericeus* Grandid., Rev. Zool., 1872, p. 274; Milne-Edw. et Grandid., Hist. Nat. Madag., Mamm., I, 1875, p. 4, pl. II; Forbes, Handb. Primates, I, 1894, p. 99.

Propithecus sericeus Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 292. (Note).

SILKY SIFAKA.

Type locality. Sambava, northwest coast of Madagascar. Type in Paris Museum.

Geogr. Distr. Narrow belt of forest between the rivers Lokoi and Bemarivo, on eastern side of the mountains in north western Madagascar.

Gen. Char. Body white or washed with yellow; face black, spotted.

Color. Face and forehead black, spotted with yellow; top and back of head dark brownish gray; back, shoulders and arms pale fawn; hands black; rest of body, legs and tail white.

The type in the Paris Museum is entirely white, the other colors having disappeared from exposure to light.

Measurements. Size equal to *P. v. coronatus.* Skull: occipito-nasal length, 77; Hensel, 68; zygomatic width, 57; intertemporal width, 31; median length of nasals, 14; length of upper molar series, 28; length of mandible, 56; length of lower molar series, 31.

PROPITHECUS VERREAUXI Grandidier.

Propithecus verreauxi Grandid., Rev. Mag. Zool., 1867, pp. 84, 313; *Id.* Album Reunion, IV, 1867, p. 162, pls. I-II; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, 1870, p. 136; *Id.* Proc. Zool. Soc. Lond., 1872, p. 847; Milne-Edw. et Grandid., Hist. Nat. Mad., Mamm., I, 1875, p. 305, pls. IV, VIII;

Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 293; Bartl., Proc. Zool. Soc. Lond., 1879, p. 769; Forbes, Handb. Primates, I, 1894, p. 100; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 542, Zool. Ser.

Propithecus majori Rothsch., Novit. Zool., I, 1894, p. 666, pl. XIV.

VERREAUX'S SIFAKA.

Type locality. Mananzari, Madagascar. Type in Paris Museum.

Geogr. Distr. South west coast of Madagascar, between the southern base of the eastern range of mountains and the River Tsidsibon.

Genl. Char. Face naked; skull swollen between orbits; incisors sub-equal.

Color. Top of head dark reddish brown, this color not reaching the face; gray patch on middle of back; outer side of forearms, and legs ashy gray; rest of head, body and limbs white; tail yellowish white. Face and interior of ears black.

Measurements. Total length, 1,000; tail, 550. Skull: occipitonasal length, 77; Hensel, 64; zygomatic width, 55; intertemporal width, 27; median length of nasals, 8; length of upper molar series, 27; length of mandible, 56; length of lower molar series, 28.

The type of this species in the Paris Museum with the exception of the spot on the head has faded completely, the entire body and limbs being white, the gray hue having disappeared. *P. majori* is undoubtedly a melanistic form of P. VERREAUXI which is found in the same locality, the Collector obtaining both the typical and melanistic styles. I have examined the type of *majori* in Tring Museum.

PROPITHECUS VERREAUXI DECKENI (Peters).

Propithecus deckeni Peters, Monatsb. K. Preuss. Akad. Wiss. Berlin, 1870, p. 421; Gray, Proc. Zool. Soc. Lond., 1872, p. 847; Bartl., Proc. Zool. Soc. Lond., 1875, p. 63; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 294; Forbes, Handb. Primates, I, 1894, p. 101.

Propithecus candidus Grandid., Compt. Rend., 1871, p. 231.

Propithecus verreauxi var. *deckeni* Milne-Edw. et Grandid., Hist. Nat. Madag., Mamm., I, 1875, p. 312, pl. V.

Propithecus verreauxi deckeni Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 542, Zool. Ser.

VAN DER DECKEN'S SIFAKA.

Type locality. West coast of Madagascar. Type in Berlin Museum.

Geogr. Distr. Middle of the west coast of Madagascar on the great plains between the rivers Mananbolo and Manzarayo.

Genl. Char. Face and ears black, colors pale, various.

Color. General color entirely white washed with yellow, or ashy gray on neck and outer side of limbs; chest, and inner side of limbs rusty white; under parts rufous; fulvous patch at base of tail; tail white. Ex type Berlin Museum.

Some specimens have a gray collar, others only a gray spot on the neck.

Measurements. Skull: occipito-nasal length, 78; Hensel, 66; zygomatic width, 56; intertemporal width, 32; median length of nasals, 13; length of upper molar series, 28; length of mandible, 60; length of lower molar series, 30.

PROPITHECUS VERREAUXI COQUERELI (A. Milne-Edwards).

Cheirogaleus (!) *coquereli* A. Milne-Edw., Rev. Mag. Zool., 1867, p. 85.

Propithecus damonis Sclat., Proc. Zool. Soc. Lond., 1870, p. 112; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., Append., p. 137; *Id.* Proc. Zool. Soc. Lond., 1872, p. 847; Pollen in Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 293.

Propithecus verreauxi var. *coquereli* Milne-Edw. et Grandid., Hist. Nat. Madag., Mamm., I, 1875, p. 314, pl. VI.

Propithecus verreauxi coquereli Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 542, Zool. Ser.

Propithecus coquereli Forbes, Handb. Primates, I, 1894, p. 102, pl. XI; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 292.

COQUEREL'S SIFAKA.

Type locality. Morondova, Madagascar. Type in Paris Museum.

Geogr. Distr. North west coast of Madagascar between the south side of Marendry Bay and the north side of Bombetok Bay, the Betsiboka River being the southern limit of its range and the Loza the northern.

Genl. Char. Face naked, and except a white center on the nose, is black; ears black, nearly hidden in fur; colors white and maroon.

Color. Outer side of arms from shoulder to wrist, chest, and upper part of thighs dark maroon; head, neck, body above and beneath, inner side of limbs, and long hair from lower side of arms and legs yellowish white; loins, hands and feet white; tail rusty gray; ears black. Ex type Paris Museum.

Measurements. Skull: occipito-nasal length, 82; Hensel, 70; zygomatic width, 60; intertemporal width, 33; median length of nasals, 10; length of upper molar series, 28; length of mandible, 60; length of lower molar series, 26.

PROPITHECUS VERREAUXI CORONATUS A. Milne-Edwards.

Propithecus verreauxi var. *coronatus* A. Milne-Edw., Rev. Scient., 1871, p. 224; Milne-Edw. et Grandid., Hist. Nat. Madag., Mamm., I, 1875, p. 316, pl. VII.

Propithecus coronatus Gray, Proc. Zool. Soc. Lond., 1872, p. 847; 1875, p. 63; Forbes, Handb. Primates, I, 1894, p. 102.

Propithecus verreauxi coronatus Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 542, Zool. Ser.

CROWNED SIFAKA.

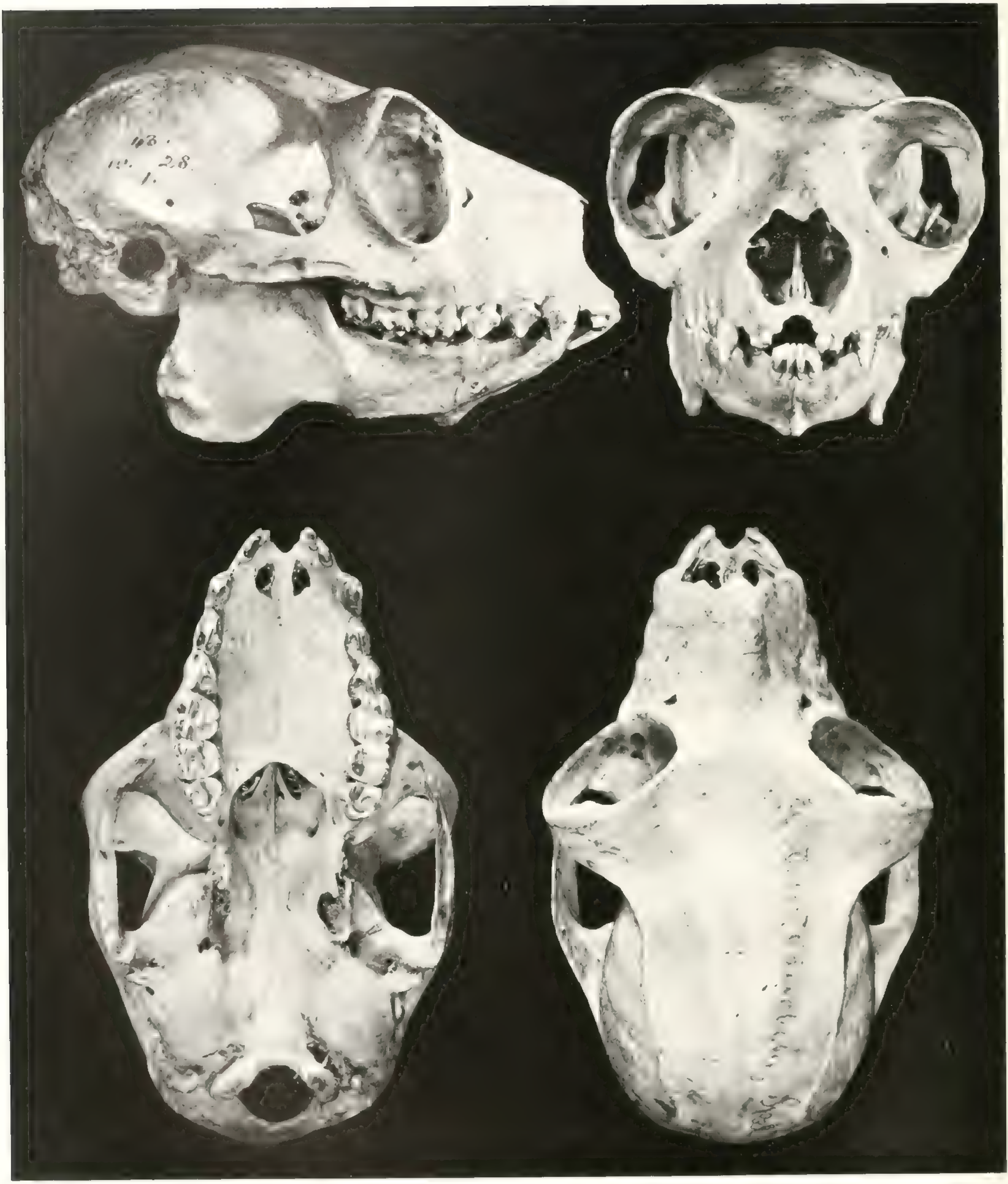
Type locality. Province of Boeny on the Bay of Bombetok, Madagascar. Type in Paris Museum.

Geogr. Distr. North west coast of Madagascar between the Bay of Mozamba on the north, the River Betseboka on the east, and the River Manzaray on the west, in the country of Boeny, extending its range for some distance into the interior.

Genl. Char. Muzzle broad, naked; braincase large; nasals extending beyond incisors; nose flat. Colors various.

Color. Face naked, black; top of nose covered with short white hairs; top and sides of head in front of ears descending to, and covering the throat, chocolate brown; ears black fringed with white; upper surface of arms and thighs rusty red; under part orange red; rest of body, limbs, hands, feet and tail pure white. Ex type Paris Museum.

Measurements. Size about equal to P. VERREAUXI. Skull: occipito-nasal length, 81; Hensel, 67; intertemporal width, 34; zygomatic width, 55; median length of nasals, 11; length of upper molar series, 28; length of lower molar series, 30. Ex type Paris Museum.



INDRIS INDRIS.

No. 48.10.28.1. Brit. Mus. Coll. Nat. Hist.

GENUS INDRIS. BLACK INDRIS.

$$\text{I. } \frac{2-2}{1-1}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{2-2}{2-2}; \quad \text{M. } \frac{3-3}{3-3} = 30.$$

INDRI (sic) E. Geoff., Mag. Encyclop., I, 1796, p. 46. Type *Lemur indri* Gmelin.

Indrium Rafin., Analys. Nat., 1815, p. 54.

Pithelemur Less., Spec. Mamm., 1840, pp. 207-209.

Sylvanus Oken, Lehrb. Naturgesch., 1816, 3ter Theil, Zool. 2te Abeth., 1223-1225, (nec Latreille 1870, Coleopt.).

Head longer than broad; nose moderately lengthened covered with short hairs; fingers and toes hairy to the tips; ears rounded with a hairy fringe; arms about one quarter as long as legs; hands long, the four outer fingers united by a membrane up to the first joint; toes united half way. Ears rather large, tufted; tail rudimentary. Skull: long, laterally compressed; nasals not reaching end of premaxillæ; two upper premolars are unicuspidate; the molars quadricuspidate, each pair united by a transverse ridge; canines higher than premolars, no diastema; incisor subequal; first and second lower premolars semicuspidate; first molar quadricuspidate, each pair connected by an oblique ridge; anterior external cusp continued by a curved ridge to anterior basal process, and posterior internal cusp is joined to the anterior internal cusp by a curved oblique ridge; second molar quadricuspidate, no oblique ridge, the pairs of cusps connected by transverse ridges; posterior molar quinquicuspidate, oblique ridges connecting the pairs of cusps; incisors varying with individuals and in proportions, and with longitudinal external ridges. Laryngeal pouch present.

INDRIS INDRIS (Gmelin).

Lemur indri Gmel., Syst. Nat., I, 1788, p. 42; Link, Beytr. Naturg., 2nd Pt. 1795, p. 65; Cuv., Règn. Anim., 1817, I, p. 118; 1829, p. 108; 1836, p. 130.

Indri brevicaudata E. Geoff., Mag. Encyclop., 1796, p. 46; Shaw, Genl. Zool., I, 1800, p. 94, pl. XXXII; Fisch., Anat. Maki, 1804, p. 15, pl. II; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 290.

Lichanotus indri Illig., Prodr. Syst. Mamm. et Avium, 1811, p.

72; Oken, Lehrb. Zool., 1816, p. 1178; Blainv., Ostéog., Atl., Lemur, pls. IV, VIII.

Indris brevicaudatus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 157; Desm., Nouv. Dict. Hist. Nat., XVI, 1817, p. 170; *Id.* Mamm., 1820, p. 96; *Id.* Dict. Scien. Nat., 1823, p. 129; Less., Man. Mamm., 1827, p. 65; Ogilby, The Naturalist, II, 1837, p. 8; I. Geoff., Cat. Primates, 1851, p. 68; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 20; Coquerel, Rev. Mag. Zool., 1859, p. 461; Pollen, Tijdsch. Dierk., I, 1863, p. 285; Gray, Proc. Zool. Soc. Lond., 1863, p. 133; Mivart, Proc. Zool. Soc. Lond., 1867, p. 255; Grandid., Rev. Mag. Zool., 1867, p. 314; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 91; *Id.* Proc. Zool. Soc. Lond., 1872, p. 848; Mivart, Proc. Zool. Soc. Lond., 1873, pp. 444-498; A. Milne-Edw. et Grandid., Hist. Nat. Madag., Mamm., 1875, p. 336, pls. XI, XII; Anders., Cat. Mamm. Ind. Mus. Calc., 1881, p. 94.

Indris indri E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 20, 11me Leçon.

Lichanotus indri Voigt, Das Thierr., I, 1831, p. 102; van d. Hoev., Tijdsch. Natur. Geschied., 1844, p. 44, pl. I, fig. 5; Schinz, Syn. Mamm., I, 1844, p. 114; Schleg., Handb. Dierk., I, 1857, p. 19, pl. I, fig. 2; Huxley, Proc. Zool. Soc. Lond., 1864, p. 326, fig.

Lichanotus niger Smith, S. Afr. Quartl. Journ., II, 1833, p. 27.

Pithelemur indris Less., Spec. Mamm., 1840, p. 208; *Id.* Nouv. Tabl. Règn. Anim., 1842, p. 9.

Lichanotus brevicaudatus Giebel, Die Säugeth., 1855, p. 1025; van d. Hoev., Handb. Dierk., II, 1855, p. 1041; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 140.

BLACK INDRIS. *Endrina* or *Babakotou,* and *Amboanala* in Madagascar.

Type locality. Madagascar.

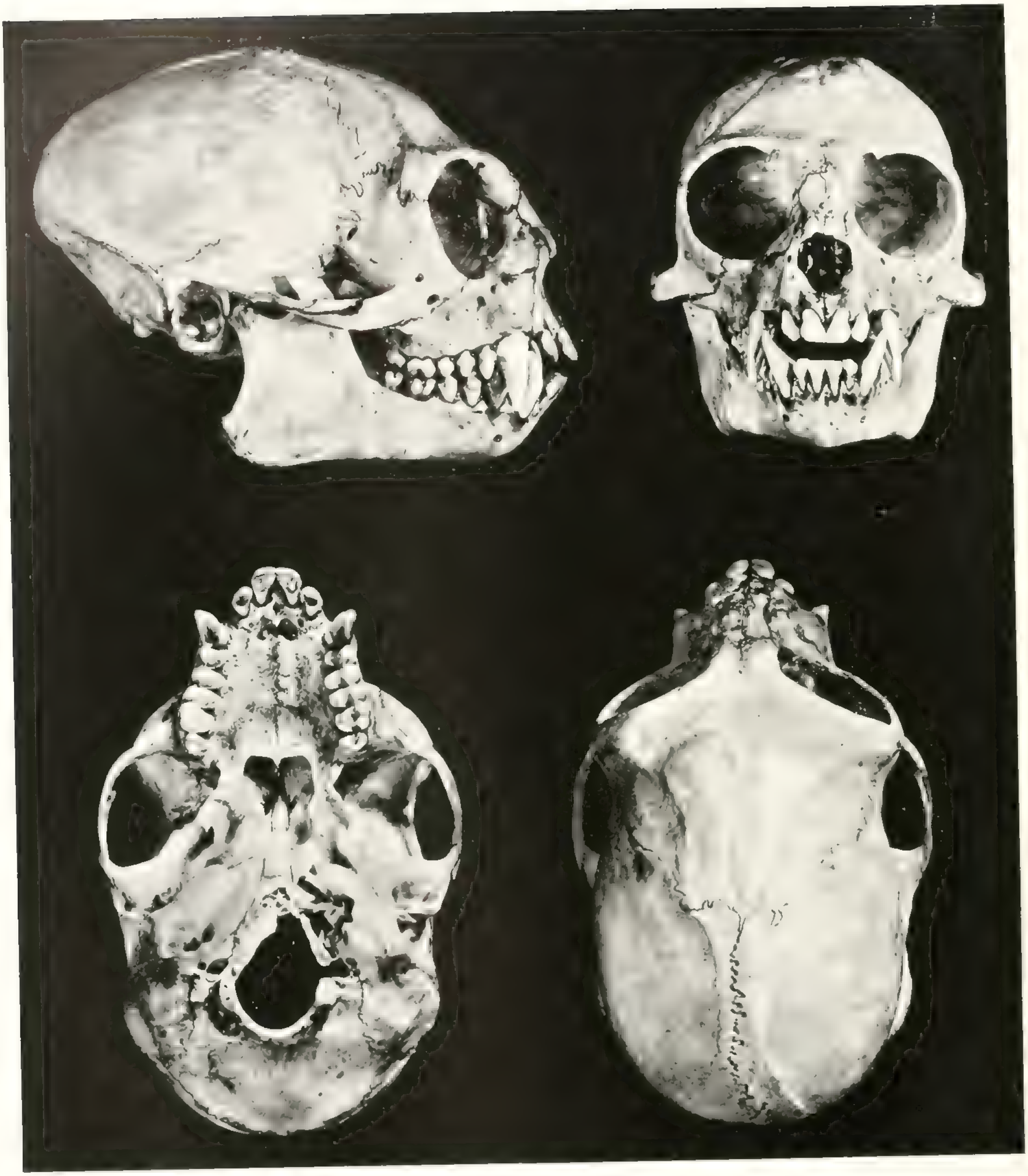
Geogr. Distr. Eastern coast of Madagascar, in forests on the eastern side of the high mountains between the Bay of Antongil on the north and the River Masara on the south.

Genl. Char. Those of the genus.

Color. The single species of this genus is so extremely variable that any description given can only be regarded as pertaining to the specimen then under consideration. No two individuals are exactly alike and the varieties of the color patterns are only limited by the number of examples in a collection. Face black or dark gray; head, neck, back, shoulders and arms black; in some the crown is white; sides of neck and forearms are grayish white; a band starting from point in middle of back and widening as it goes down and embracing the entire rump and root of tail, white; sides dark gray tinged with brown; upper surface of thighs from body to middle of leg below knee inside, black; rest of thighs and legs dark gray; under parts of body and tail gray; hands and feet black. In some specimens the lower back is ashy gray; flanks bright rufous; tufts over ears large, upright, black. Although exhibiting such a great variety of color patterns as well as diversity of hues, the species can never be confounded with any other, its large size and stumpy tail making it at all times easily recognizable.

Measurements. Skull: occipito-nasal length, 91; Hensel, 82; zygomatic breadth, 58; intertemporal width, 36; length of nasals, 20; width of braincase, 43; length of upper molar series, 31; palatal length, 35; length of mandible, 66; length of lower molar series, 34.

Coquerel (l.c.) has given an interesting account of the habits of this species as observed by him in Madagascar. He says it is well known to the inhabitants who call it *Babakotou*, but never *Indri* which means in their language "Behold," "look," "see there!" It is probable when Europeans first hunted this animal, the natives drew their attention to it by calling out *Indri*, and in this way the idea was formed that that was the native name for it. It is very common in the forests of Tamatava where it is considered sacred. The natives never kill it, and they say that the trees on which the *Babakotou* live supply a sure remedy for many forms of illness; and they gather carefully the leaves of the trees in which they have seen the animals, for their benefit. The natives state it is very dangerous to attack a *Babakotou* even with a spear. If this weapon is thrown at one, you may be sure it will be seized in its flight before reaching its mark and will be immediately hurled back at the thrower, and the *Babakotou* never misses its aim. The tales of which the *Indri* is the hero are endless. Its ways are full of mystery, and it is subject at birth to a severe trial. When the young one is born, the female takes it in her arms and throws it to the male, who is stationed at a considerable distance away, and he throws it back to its mother, and this is repeated a dozen times or more. If the baby falls to the ground, it is left there, the parents making no effort to recover it, but if it passes the trial without falling, it is tenderly cared for. The *Indri* is not found on any of the outlying islands near Madagascar. This animal is gregarious and goes in troops of considerable numbers, is the largest of the Lemuroides, and is not nocturnal. One of its names is *Amboanala* or 'Dog of the Forest,' so called on account of the howls it utters, and which resemble those of a dog. Its voice is very powerful, the laryngeal sac contributing to this, and enabling the creature to utter loud cries. It lives in the trees and subsists mainly on fruits of various kinds, but will eat the brains of any bird it can catch. Its melancholy cry is frequently heard in the forest resembling that uttered by a person in distress. According to Dr. Vinson the natives free these animals if they find one in captivity and bury them when dead. The Betanemena tribe relate a legend of a certain tribe which was at war with neighbors and fled for refuge into the forest. Its enemy pursuing and guided as supposed by human voices, saw before them a troup of *Indri,* and believing those they were following had been changed into beasts, they fled terror stricken, while the fugitives vowed eternal gratitude to their deliverers, and have never since harmed them.



SENIOCEBUS METICULOSUS ELLIOT.

No. 32703 Amer. Mus. Nat. Hist. Coll. Type. 1½ Nat. Size.

SUBORDER 2. ANTHROPOIDEA.

FAMILY I. CALLITRICHIDÆ.

GENUS SENIOCEBUS. BALD-HEADED TAMARINS.

$$\text{I.}\ \frac{2-2}{2-2};\quad \text{C.}\ \frac{1-1}{1-1};\quad \text{P.}\ \frac{3-3}{3-3};\quad \text{M.}\ \frac{2-2}{2-2} = 32.$$

SENIOCEBUS Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 68. Type *Midas bicolor* Spix.

Tamarin Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 68.

Face naked, hairy in young; no mane; head in front of ears bald; ears naked, exposed; tail not ringed.

With this genus we enter the Suborder Anthropoidea. The Tamarins all belong to the Platyrrhine or New World Monkeys, and in many respects occupy the lowest rank. They possess but thirty-two teeth, instead of thirty-six as in the Cebidæ and higher Apes, as well as in man, the discrepancy being caused by the absence of two molars in each jaw, only eight in all remaining.

The Tamarins placed in this work in the four genera Seniocebus, *Cercopithecus, Leontocebus with a subgenus *Marikina,* and Œdipomidas, are small delicate creatures with silky fur, and long, thick, almost bushy tails. By the earlier writers they were contained either in Callithrix or *Hapale* with the Marmosets, but are now not considered cogeneric with the species contained in the first of those genera, and the second *Hapale,* being antedated, becomes a synonym. The chief difference between the members of Callithrix and the species now under consideration is found in the teeth, the canines of the lower jaw being longer than the incisors, a distinction deemed by some Authors as perhaps hardly sufficient to cause the Tamarins to be separated generically from their relatives. Tamarins and Marmosets resemble each other, and the skulls with the large braincase are much alike. Both groups possess but little intelligence, as the cerebrum, in its smooth surface almost lacking in convolutions, would seem clearly to indicate. These animals possess somewhat rounded heads, and large eyes and mouths; the ears are conspicuous, standing out from the hair, and the face is small and short. Rather long whiskers and manes are often present. In captivity, even in their own land, they rarely live long, and usually succumb in a brief period when carried to northern climes, cold temperatures being fatal to them. They are pretty creatures, and a number of the species bear a certain resemblance to each other, and so it is possible to arrange them in groups, distinguished by the hair on head and neck, being respectively long or short.

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*See Elliot, in Bull. Am. Mus. Nat. Hist., N. Y., 1911, p. 341.

LITERATURE OF THE SPECIES OF THE FOUR GENERA OF TAMARINS AND MARMOSETS.

1758. *Linnæus, Systema Naturæ.*
Two species are described as *Simia œdipus* = ŒDIPOMIDAS ŒDIPUS; and *Simia midas* = CERCOPITHECUS MIDAS.

1766. *Linnæus, Systema Naturæ.*
The two species of the earlier edition of this work are also given in this one, and another added, *Simia rosalia* = LEONTOCEBUS ROSALIA.

1777. *Erxleben, Systema Regni Animalis.*
Under the genus CALLITHRIX, in which the earlier writers were accustomed to place the Tamarins, three species only are given: (*C.*) ŒDIPUS; (*C.*) ROSALIA; and (*C.*) MIDAS.

1788. *Gmelin, Systema Naturæ.*
The three Linnæan species already mentioned are here recorded, and no new ones added.

1806. *Fischer, in Bulletin de la Société Impériale de Moscou.*
CERCOPITHECUS MIDAS redescribed as *Simia lacépèdii.*

1811, *Humboldt et Bonpland, Recueil d'Observations de Zoologie*
(1815). *et d'Anatomie Comparée.*
LEONTOCEBUS LEONINA described as *Simia leonina.*

1812. *E. Geoffroy Saint-Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*
Six species are enumerated under the genus *Midas,* the valid ones being, (*M.*) *ursulus* = CERCOPITHECUS URSULUS; (*M.*) *labiatus* = LEONTOCEBUS LABIATUS; (*M.*) *rosalia* = LEONTOCEBUS ROSALIA; (*M.*) *œdipus* = ŒDIPOMIDAS ŒDIPUS; and (*M.*) *rufimanus* = CERCOPITHECUS RUFIMANUS. The remaining (M.) LEONINUS is a most doubtful species, no examples ever having

been secured. The first two of the valid species are described for the first time.

1820. *Kuhl, Beiträge zur Zoologie und vergleichenden Anatomie.* Seven species are here given, one of which is described for the first time as (*Midas*) CHRYSOMELAS. The other valid species are (*M.*) URSULUS = CERCOPITHECUS URSULUS; (*M.*) LABIATUS; (*M.*) ROSALIA; both now included in the genus LEONTOCEBUS; and (*M.*) ŒDIPUS, now placed in the genus ŒDIPOMIDAS. The last valid species (*M.*) *rufimanus* = CERCOPITHECUS RUFIMANUS; and (*M.*) LEONINUS a doubtful species, no example extant.

1820. *Desmarest, Mammalogie ou Description des Espèces de Mammifères.* The list given by Kuhl is repeated in this work, all the species placed in the genus *Jacchus.*

1823. *Spix, Simiarum et Vespertilionum Brasiliensium.* Five species are enumerated in this work, four of which are described for the first time under the genus *Midas.* They are (*M.*) FUSCICOLLIS; (*M.*) NIGRICOLLIS; (*M.*) MYSTAX; and (*M.*) BICOLOR. These are now all placed in the genus LEONTOCEBUS, except BICOLOR, which is a species of SENIOCEBUS. The fifth species is (*M.*) ŒDIPUS = ŒDIPOMIDAS ŒDIPUS.

1826. *Maximilian, Prinz von Wied-Neuwied, Beiträge zur Naturgeschichte von Brasilien.* Under the genus *Hapale* five species are enumerated only two of which belong to LEONTOCEBUS; viz.: L. ROSALIA and L. CHRYSOMELAS; the latter more fully described than in the previous work above cited. The other species are (*H.*) JACCHUS; (*H.*) LEUCOCEPHALUS; and (*H.*) PENICILLATUS; all belonging to the genus CALLITHRIX.

1829. *Fischer, (J. B.) Synopsis Mammalium.* In the second section of the genus *Jacchus* ten species are enumerated of which seven are valid, viz.: (*J.*) MIDAS; (*J.*) URSULUS; (*J.*) LABIATUS; (*J.*) CHRYSOMELAS; (*J.*) ROSALIA; (*J.*) CHRYSOPYGUS; and (*J.*) ARGENTATUS. The first two are now included in the genus CERCOPITHECUS, the rest in LEONTOCEBUS; and (*J.*) ŒDIPUS = ŒDIPOMIDAS ŒDIPUS. The other is (*J.*) *leoninus* doubtful. No new species described.

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.* The genus CERCOPITHECUS is here represented by *Midas,* with one species (*M.*) *tamarin* = CERCOPITHECUS MIDAS; the C. URSULUS being regarded as the male of middle age, and LEONTOCEBUS FUSCICOLLIS being the young. The Genus ŒDIPUS has *Œdipus titi* = ŒDIPOMIDAS ŒDIPUS; *Cercopithecus bicolor* (Spix), being the immature animal. Under the genus *Leontopithecus* = LEONTOCEBUS, of the subgenus *Marikina*, the following species and varieties are given: *L. aurora* = L. ROSALIA; *L. fuscus* = L. LEONINA; *L. ater* = L. CHRYSOPYGUS; var. A. and var. B. L. CHRYSOMELAS. The method of arrangement adopted by this Author is unsatisfactory and somewhat confusing.

1840. *Wagner, Schreber, die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*
A similar arrangement with that of previous Authors is here given, and species belonging to different genera are brought together in the genus *Hapale.* (*H.*) JACCHUS; (*H.*) LEUCOCEPHALA; (*H.*) AURITA; (*H.*) *melanura* = (*H.*) ARGENTATA; the last belonging to the genus CALLITHRIX. The other species are CERCOPITHECUS MIDAS; CERCOPITHECUS URSULUS; SENIOCEBUS BICOLOR; LEONTOCEBUS LABIATA; L. CHRYSOMELAS; L. CHRYSOPYGUS; L. LEONINA, L. ROSALIA, and ŒDIPOMIDAS ŒDIPUS.

1843. *J. E. Gray, in Annals and Magazine of Natural History.*
LEONTOCEBUS LABIATUS redescribed as *Midas rufiventer.*

1845. *Pucheran, in Revue et Magasin de Zoologie.*
LEONTOCEBUS ILLIGERI first described as *Midas illigeri;* and ŒDIPOMIDAS GEOFFROYI first described as *Hapale geoffroyi.*

1848. *I. Geoffroy et Deville, in Comptes Rendus.*
LEONTOCEBUS PILEATUS first described as *Midas pileatus;* and LEONTOCEBUS FUSCICOLLIS redescribed as *Midas flavifrons*; and L. NIGRICOLLIS redescribed as *Midas rufoniger.*

1849. *Deville, in Revue et Magasin de Zoologie.*
LEONTOCEBUS WEDDELII described as *Midas weddelii.*

1850. *I. Geoffroy Saint-Hilaire, in Comptes Rendus.*
LEONTOCEBUS DEVILLII first described as *Hapale devillii.*

1851. *I. Geoffroy Saint-Hilaire, Catalogue des Primates.*
A review of the Tamarins is here given and two described as new, only one of which is valid. All are included in the genus Midas. The species are (*M.*) ROSALIA; (*M.*) CHRYSOMELAS; (*M.*) LABIATUS; (*M.*) PILEATUS; (*M.*) MYSTAX; (*M.*) DEVILLII; (*M.*) RUFONIGER = L. NIGRICOLLIS (Spix); (*M.*) NIGRIFRONS;

M. flavifrons = L. FUSCICOLLIS (Spix); (*M.*) ILLIGERI; and (*M.*) WEDDELI. All these are now included in the genus LEONTOCEBUS. (*M.*) ŒDIPUS, and (*M.*) GEOFFROYI, are now placed in the genus ŒDIPOMIDAS; while (*M.*) URSULUS and (*M.*) RUFIMANUS are arranged in the genus CERCOPITHECUS; and (*M.*) BICOLOR in the genus SENIOCEBUS.

1852. *I. Geoffroy Saint-Hilaire, in Archives du Muséum d'Histoire Naturelle, Paris.*
In this paper five Tamarins are given, being those described in the Comptes Rendus in 1848 and 1850. They are (*Midas*) PILEATUS; (*Hapale*) DEVILLII; (*Hapale*) NIGRIFRONS; (*Midas*) *flavifrons* = LEONTOCEBUS FUSCICOLLIS; and (*Midas*) *rufoniger* = L. NIGRICOLLIS. *Midas* and *Hapale* were used at different times for the generic name, but in this paper *Midas* is selected as the name of the genus.

1855. *Wagner, Schreber, die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*
A list similar to that given by this Author in 1840, but enlarged. The additional species are *Leontocebus rufiventer* = L. LABIATUS; L. FUSCICOLLIS; L. NIGRICOLLIS; L. WEDDELI; L. ILLIGERI; and ŒDIPOMIDAS GEOFFROYI. All are placed in the genus *Hapale* with three subgenera, *Jacchus, Liocephalus,* and LEONTOCEBUS. The species now arranged in the genus CALLITHRIX are also included in *Hapale,* and in the first two subgenera, but LEONTOCEBUS has merely the species of Marmosets belonging to it, and to ŒDIPOMIDAS. No new species described.

1862. *Reichenbach, der Vollständigste Naturgeschichte der Affen.*
The species of LEONTOCEBUS are placed in this work in the genera *Leontopithecus, Marikina, Midas,* and *Seniocebus* as follows: (*L.*) LEONINUS; (*M.*) ROSALIA; (*M.*) CHRYSOMELAS; (*M.*) ALBIFRONS; (*M.*) RUFIMANUS; (*M.*) URSULUS; (*M.*) *rufiventer* = L. LABIATUS; (*M.*) FUSCICOLLIS; (*M.*) BICOLOR; (*S.*) CHRYSOPYGUS; (*S.*) MYSTAX; (*S.*) NIGRICOLLIS; (*S.*) PILEATUS; (*S.*) RUFONIGER = L. NIGRICOLLIS; (*S.*) DEVILLII; (*S.*) NIGRIFRONS; (*S.*) *flavifrons* = L. FUSCICOLLIS; (*S.*) ILLIGERI; (*S.*) WEDDELI; (*S.*) *erythrogaster* = L. LABIATUS.

1864. *J. H. Slack, in Proceedings of the Academy of Natural Sciences of Philadelphia.*
LEONTOCEBUS LABIATUS redescribed as *Midas elegantulus.*

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in Collection of the British Museum.*

In his tribe *Hapalina* the species of Marmosets are in this List arranged under four genera: *Leontopithecus,* Œdipus, *Midas* and Seniocebus. In *Leontopithecus* are placed rosalia, and chrysomelas; Œdipus has *titi* = O. œdipus; and geoffroyi both in Œdipomidas; *Midas* contains mystax; labiatus; *rufiventer* = Leontocebus labiatus; *leucogenys* = Leontocebus devillii; *flavifrons* = Leontocebus fuscicollis; ursulus; and *ursulus* var. 2 = *Cercopithecus* midas (Linn.). Seniocebus contains but one species bicolor Spix.

Descriptions are given of the following species which, evidently, the writer had never seen: (*Midas*) *rufoniger* = Leontocebus nigricollis; (*M.*) devillii; (*M.*) nigrifrons; (*M.*) illigeri; (*M.*) fuscicollis; and (*M.*) weddeli; the last two supposed to be the same.

1870. *Espada, (J. L. de la), in Boletin Revista Universitado de Madrid.* Leontocebus lagonotus described as *Midas lagonotus;* and L. graellsi described as *Midas graellsi.*

1876. *Schlegel, Muséum d'Histoire Naturelle des Pays-Bas, Simiæ.* The Tamarins in this work are included with the Marmosets in the genus *Hapale.* The Author places them in one division with various sections, some of them having subdivisions. A. has (*H.*) rosalia; (*H.*) chrysomelas; and (*H.*) chrysopyga; all Leontocebus; B. has (*H.*) leonina; *a.* subdivision, has (*H.*) bicolor, a Seniocebus; in *b.* are (*H.*) œdipus; and (*H.*) geoffroyi; both in Œdipomidas. D. subdivision *a.* includes (*H.*) labiata; (*H.*) pileata; and (*H.*) mystax; *b.* has (*H.*) devillii; (*H.*) weddeli; (*H.*) illigeri; (*H.*) nigrifrons; (*H.*) fuscicollis; and (*H.*) nigricollis; all belonging to Leontocebus; *c.* (*H.*) ursula; and (*H.*) midas; both in Cercopithecus. Much attention is given to the geographical distribution of the various species, and descriptions added.

1878. *A. Milne-Edwards, in Nouvelles Archives du Muséum d'Histoire Naturelle, Paris.* Leontocebus tripartitus described as *Midas tripartitus.*

1904. *O. Thomas, in Annals and Magazine of Natural History.* Leontocebus apiculatus described as *Midas apiculatus.*

1907. *Goeldi, in Proceedings of the Zoological Society of London.* Leontocebus thomasi described as *Midas thomasi;* and Leontocebus imperator described as *Midas imperator.*

1912. *O. Thomas, in Annals and Magazine of Natural History.* Seniocebus martinsi described as Leontocebus martinsi.

1912. *D. G. Elliot, in Bulletin of the American Museum of Natural History, New York.*
SENIOCEBUS METICULOSUS first described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

The most northern country inhabited by the Tamarin Monkeys is Central America where in the southern portion, in Costa Rica and extending its range through Panama to the Isthmus, ŒDIPOMIDAS GEOFFROYI is found. In the Guianas, northern South America, CERCOPITHECUS MIDAS is a dweller of the English and Dutch Guianas, and CERCOPITHECUS RUFIMANUS is met with in French Guiana, and on the banks of the Rio Araguay, Province of Goyas, Brazil, and as stated by Tschudi, also in Peru. The great territory of Brazil contains, as would be supposed, the greatest number of species, twenty-four in all including C. RUFIMANUS just mentioned. In the vicinity of Para on the lower Amazon, near the mouth of the Rio Tocantins, C. URSULUS is met with, and in the forests through which the Ilhéos and Pardo flow in eastern Brazil, LEONTOCEBUS CHRYSOMELAS occurs; and strangely enough, though it is not known from Western Brazil, yet, according to Tschudi, it is a native of Peru; and on the Rio Negro and on the Upper Amazon west of Barra, SENIOCEBUS BICOLOR is found; and on the north shore of the Amazon at Faro, near the mouth of the River Yamundá SENIOCEBUS MARTINSI was taken. In south eastern Brazil in the Province of Rio Janeiro, L. ROSALIA is found, and if the animal mentioned by Bates (l. c.) under the name of *Midas leoninus* is the same, then it extends its range to the Upper Amazon, although there are no records of its appearance in the intervening districts. In the Province of Sao Paulo near Ipanema, L. CHRYSOPYGUS is met with, and on the banks of the Rio Solimoens, and as stated by Castelnau and Deville, also at Pebas, Peru, L. NIGRICOLLIS occurs. In the forests between the rivers Solimoens and Içа, L. MYSTAX and L. FUSCICOLLIS dwell; and on the banks of the Rio Purus, Upper Amazon, L. IMPERATOR has been procured. Near the Rio Javari on the borders of Brazil and Peru, L. NIGRIFRONS occurs, and its range extends to the Rio Copataza in Ecuador. Between the Rio Solimoens and Rio Javari, L. LABIATUS has been obtained, and Tschudi states it is also a native of Peru. At Tunambins on the Upper Amazon L. THOMASI was obtained, its range unknown, and still more indefinite, somewhere on the Upper Amazon, no locality given, L. LAGONOTUS was taken. At Popayan, Colombia, the monkey seen by Humboldt and called by him

Simia LEONINA, but not procured, occurs. In Colombia, at Cartagena and Turbaco ŒDIPOMIDAS ŒDIPUS is found, and on the River San Jorge SENIOCEBUS METICULOSUS was taken, and in Ecuador on the Rio Napo L. TRIPARTITUS and L. GRAELLSI have been obtained; and in the same State on the banks of the Rio Copataza, L. APICULATUS and L. ILLIGERI are met with, the latter species possibly extending its range into Colombia, (see I. Geoff., Cat Primates, p. 65). In Peru near Pebas, L. PILEATUS was procured; and on the banks of the rivers Ucayali and Huallaga, L. DEVILLII dwells. Finally, in the Province of Apolobamba, Bolivia, L. WEDDELI is found. In the above recapitulation of the general distribution of these small monkeys, the ranges are given according to the records obtained from specimens collected. While some species may have a restricted habitat, others probably have much more extensive ranges than those known at present. The interior of Brazil, removed from the banks of its great rivers, is as yet imperfectly known, and it will not be until its vast forests and inland savannas have been thoroughly penetrated and explored, that the Geographical distribution of its Faunæ, and the ranges of its individual species can be definitely ascertained.

KEY TO THE SPECIES.

A. Head bald.
  a. Hairs on nape white.
    a.′ Abdomen and inner side of legs orange rufous ....*S. bicolor.*
    b.′ Entire under parts and inner side of legs silvery white ....*S. meticulosus.*
  b. Hairs on nape black ....*S. martinsi.*

SENIOCEBUS BICOLOR (Spix).

Midas bicolor Spix, Sim. et Vespert. Bras., 1823, p. 30, pl. XXIV, fig. 1; I. Geoff., Cat. Primates, 1851, p. 63; Slack, Proc. Acad. Nat. Scien. Phila., 1861, p. 464; Bates, Natural. Riv. Amaz., I, 1863, p. 344; Forbes, Handb. Primates, I, 1894, p. 147.

Hapale bicolor Wagn., Schreb., Säugth. Suppl., I, 1840, p. 251; V, 1855, p. 135; I. Geoff., in Casteln., Expéd. Amér. Sud, 1855, p. 21; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 188, 193; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 257.

Marikina bicolor Reichenb., Vollständ. Naturg. Affen, 1862, p. 11, fig. 33.

Seniocebus bicolor Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 68.

PIED TAMARIN.

Type locality. Rio Negro, Brazil. Type in Munich Museum.

Geogr. Distr. Eastern bank of the Rio Negro, Brazil. Pebas, Upper Amazon west of Barra, (Castelnau and Dev.).

Genl. Char. Head in front of ears naked; hairs on back of head long, white; face in young, hairy; tail very long.

Color. Head in front of ears, naked, black; back of head, neck, back between shoulders, arms, chest to middle of belly ending in a point, white; back and legs yellowish brown, darkest on dorsal line; hands white; feet golden yellow; sides of lower chest, abdomen and inner side of legs, deep orange rufous; tail, black above, orange rufous beneath.

Measurements. Skin, total length, about 650; tail, 380. Skull: occipito-nasal length, 49; zygomatic width, 34; intertemporal width, 24; palatal length, 14; width of braincase, 27; length of nasals, 7; length of upper molar series, 9; length of mandible, 32; length of lower molar series, 31.

This monkey has a peculiar appearance with its bare head and white coloring, which makes it rather exceptional among the Tamarins. There is also a total absence of brilliant colors possessed by many of its relatives, save on the under parts, inner side of legs and tail beneath. The immature individuals have the head covered with short white hairs.

The type in the Munich Museum is not adult, the head being covered with short white hairs. It is in good condition and is well represented in Spix's plate, though the coloring in the specimen is not so bright. Another specimen, not obtained by Spix, is older with the head entirely bare.

Bates, (l. c.) states that this monkey was rather common in the forests at Barra on the lower Amazon, and is restricted so far as he knew, to the eastern bank of the Rio Negro.

A specimen in the Paris Museum, was obtained by Castelnau and Deville at Pebas on the Upper Amazon west of Barras, where Bates and Natterer also found this species. Like its relatives it goes in small troops, running along the main boughs of the loftier trees, and climbing perpendicular trunks, but never taking flying leaps.

SENIOCEBUS METICULOSUS Elliot.

Seniocebus meticulosus Elliot, Bull. Am. Mus. Nat. Hist., N. Y., 1912, p. 31.

Type locality. River San Jorge, Northern Colombia. Type in American Museum of Natural History, New York.

Genl. Char. Head and ears naked; no orange rufous on under parts; rump, root of tail and thighs bright bay.

Color. Male. Face and forehead covered with short white hairs; top of head and nape covered with very long white hairs, forming a high crest on the head and flowing over the back between the shoulders; rest of head, ears and throat naked, black; upper parts to rump dark drab; flanks paler, the hairs on the latter as well as those between the shoulders tipped with white; hairs on upper arms and shoulders from roots bright bay, with terminal third drab and tips white; thighs, rump at root of tail, and hind side of legs bright bay; rest of legs, arms, inner side of limbs, entire under parts silvery white; hands and feet grayish white; tail above bright bay on basal third, the same color extending for half the length on under side, remainder jet black. Ex type American Museum of Natural History, New York.

Measurements. Total length, 660.5 mm; tail, 400; foot, 80. Skull: total length, 49; occipito-nasal length, 46.2; Hensel, 30.3; zygomatic width, 32; palatal length, 14.4; intertemporal width, 23.1; median length of nasals, 60.7; length of upper molar series, 90.5; length of mandible, 30; length of lower molar series, 12. Ex type American Museum of Natural History, New York.

Female. Resembles the male, except there is very little of the bright bay color on the shoulders and rump, while the thighs are colored like the upper parts, dark drab, the hairs tipped with bay. Tail like that of the male.

Two examples of this handsome little monkey, the third species known of the genus, were received at the American Museum of Natural History in New York from Mrs. E. L. Kerr, Cartagena, collected in the forest on the River San Jorge, Colombia. While bearing in some of its coloration a resemblance to the species known for so long a time from Brazil, S. BICOLOR, its bright bay rump and thighs, pure silvery white under parts and inner side of limbs, and grayish white hands and feet cause it to differ in a conspicuous manner from its relative. The lately described S. MARTINSI (Thomas), is the third known species of the genus.

Seniocebus martinsi (Thomas).

Leontocebus martinsi Thos., Ann. Mag. Nat. Hist., 1812, 8th Ser., XI, p. 84.

Type locality. Faro, Lower Yamundá River, Brazil.

Genl. Char. "Precisely like L. bicolor, except that the head and fore limbs are of normal coloration, corresponding to the rest of the animal, not sharply contrasted white.

Color. "Head (in adult) naked from crown to chin, the skin black. Scanty hairs of back of crown and the nape black or brownish black. General color of back and sides isabella, darkened along the dorsal area, the middle posterior back almost blackish. Under surface tawny ochraceous, duller anteriorly, richer posteriorly. Ears quite naked, black. Arms proximally isabella. buffy yellowish on forearms, hands cream-buff or rather more yellowish; whole inner side of arms ochraceous. Hind limbs externally isabella, becoming suffused with tawny towards ankles; inner aspect rich ochraceous, tending towards ochraceous rufous. Feet yellowish buffy. Tail black above nearly to the tip; under-side and end sharply defined ochraceous.

"Young specimens with the crown well-haired, blackish mixed with grayish; face and chin thinly haired, grayish; ears with black hairs about half an inch in length.

Measurements. "Head and body, 208 mm.; tail, 366; hind foot, 61; ear, 31. Skull and teeth essentially as in L. bicolor; occiput to gnathion 51; basion to gnathion 36; zygomatic breadth 35.5; breadth across orbits 28.8; breadth of braincase, 27.5; length of upper cheek-tooth-series 10."

GENUS CERCOPITHECUS. BLACK TAMARINS.

$$\text{I. }\frac{2-2}{2-2};\quad \text{C. }\frac{1-1}{1-1};\quad \text{P. }\frac{3-3}{3-3};\quad \text{M. }\frac{2-2}{2-2}=32.$$

*__CERCOPITHECUS__ Gronov., Zoophyl. Gronov., 1763, p. 5. Type *Simia midas* Linnæus.

Cercopithecus Gronov., (nec Erxleb.), Elliot, Bull. Am. Mus. Nat. Hist., N. Y., XXX, 1911, p. 341.

Head not bald; hair of mantle long; face in adult hairy.

KEY TO THE SPECIES.

A. Hair on back of head long.
- *a.* Head not bald.
- *b.* Head, forepart of body and arms black.
  - *a.'* Back rayed black and white.
    - *a."* Hands and feet ochraceous buff; face of skull short ....*C. midas.*
    - *b."* Hands and feet tawny ochraceous; face of skull long ....*C. rufimanus.*
  - *b.'* Back rayed black and ochraceous ....*C. ursulus.*

†CERCOPITHECUS MIDAS (Linnæus).

Simia midas Linn., Syst. Nat. I, 1758, p. 28; I, 1766, p. 42; Schreb., Säugth., I, 1774-78, p. 132, pl. XXXVII; Bodd., Elench. Anim., 1784, p. 63; Humb., Obs. Zool., I, 1811, (1815), p. 362.

Little black Monkey of Edwards (CERCOPITHECUS), Gronov., Zoophyl. Gronov., 1763, I, p. 5.

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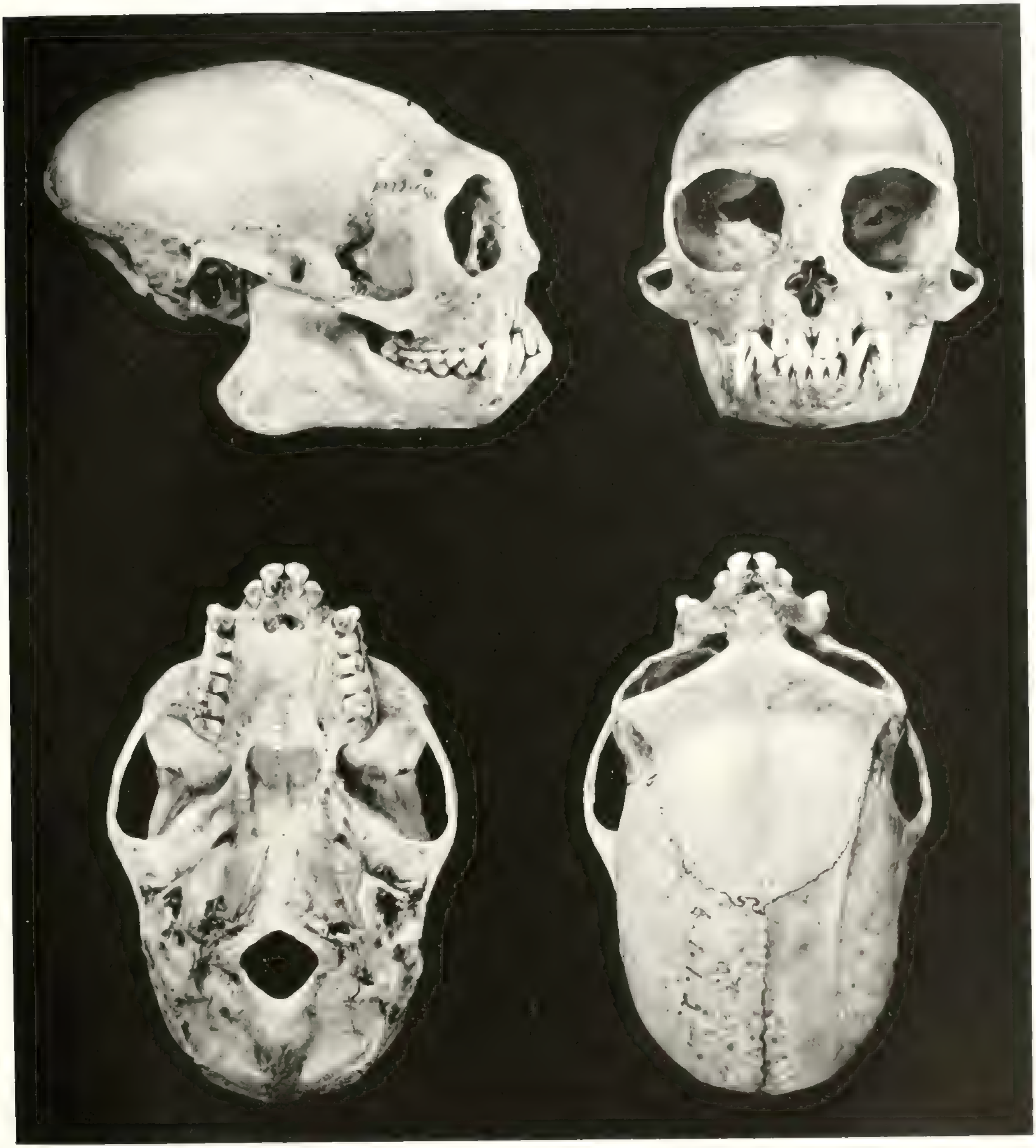
*Some Naturalists maintain that Gronow was not a binominalist, and that, therefore, his genera must not be recognized. Against this view stands the almost unanimous opinion of the Commission on Zoological Nomenclature appointed by the International Zoological Congress held at Leyden in 1810. The report which was adopted by a vote of eleven in favor to one against is as follows: "It is clear that Gronow's nomenclature is binary, that is, he names two units or things, genera and species. His generic names, therefore, correspond to the provisions of the Code, and are to be accepted as available under the Code."

It is not to be doubted, therefore, that an *Opinion* passed with so much unanimity will become a LAW at the next meeting of the Congress, and Gronow's name will be accepted by all Naturalists.

†For Geographical Distribution, see SENIOCEBUS, p. 185.



CERCOPITHECUS MIDAS.

No. 6112 Brit. Mus. Coll. ½ larger than Nat. Size.

Callithrix midas Erxl., Syn. Mamm., 1777, p. 62.
Simia lacépèdii Fisch., Bull. Soc. Imp. Nat. Mosc., 1806, p. 23.
Midas tamarin Less., Spec. Mamm., 1840, p. 194.
Hapale midas Wagn., Schreb., Säugth. Suppl., I, 1840, p. 245; V, 1855, p. 135; Mivart, Proc. Zool. Soc. Lond., 1865, p. 587, (note); Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 266.
Midas ursulus var. 2, Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 68.
Midas midas Forbes, Handb. Primates, I, 1894, p. 148.
Leontopithecus midas Thos., Proc. Zool. Soc. Lond., 1911, p. 128.
Cercopithecus midas Elliot, Bull. Am. Mus. Nat. Hist., N. Y., XXX, 1911, p. 341.

MIDAS TAMARIN.

Type locality. "In America."

Geogr. Distr. English and Dutch Guianas.

Genl. Char. Face hairy; tail very long; hair between shoulders long; hands and feet golden yellow.

Color. Head, neck, back between shoulders, arms to wrists, entire under parts and tail black; back from shoulders, and upper parts of legs rayed black and white, caused by the white tips of the hairs on the black ground color; wrists and ankles orange rufous; hands and feet ochraceous; ears black.

Measurements. Similar in size to S. BICOLOR; tail, 480. Skull: occipito-nasal length, 50; Hensel, 33; zygomatic width, 34; intertemporal width, 26; palatal length, 16; width of braincase, 28; median length of nasals, 7; length of upper molar series, 9; length of mandible, 32; length of lower molar series, 11. Height of face of skull, 9; from base of middle incisors to top of frontal between orbits, 16.

CERCOPITHECUS RUFIMANUS (E. Geoffroy St. Hilaire).

Midas rufimanus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 121; *Id.* Cours Hist. Nat. Mamm., 1828, p. 31, 1re Leçon; Tschud., Faun. Peruan., 1844, p. 53; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 190, 194; Reichenb., Vollständ. Naturg. Affen, 1862, p. 10, figs. 34, 36; Bedd., Proc. Zool. Soc. Lond., 1889, p. 121.

RUFOUS-HANDED TAMARIN.

Type locality. Ipoussin, French Guiana. Type in Paris Museum.

Geogr. Distr. French Guiana, Banks of the Rio Araguay, Province of Goyas, Brazil. (I. Geoffroy).

Genl. Char. Similar to C. MIDAS, but the hands, feet and mottling on back tawny ochraceous. Nasals longer; distance from base of middle incisors to upper outline of orbits much greater; forehead higher; superior outline of skull more curved.

Color. Like C. MIDAS, but hands, feet, and tips of hairs on back, tawny ochraceous instead of white. Ex type in Paris Museum. Skull in specimen.

Measurements. Size equal to C. MIDAS. Skull: occipito-nasal length, 50; Hensel, 33; zygomatic width, 35; intertemporal width, 25; palatal length, 25.5; breadth of braincase, 30; median length of nasals, 10; length of upper molar series, 10; height of face, from base of middle incisor to top of frontal between orbits, 20; length of mandible, 34; length of lower molar series, 12. Ex specimen British Museum.

A single specimen is in the British Museum Collection procured by G. K. Cherrie at Ipoussin on Approuague River, Cayenne. This resembles C. MIDAS with the exceptions given above, but the coloring of the specimens from the different localities is striking and arrests the attention at once. The nasals are much longer, and the difference in the height of the face of the skull is remarkable.

Geoffroy's type in the Paris Museum is in an excellent state of preservation, but the hands and feet are not so deep in color as those of the British Museum specimen, having faded considerably. Otherwise the examples are alike.

CERCOPITHECUS URSULUS (Humboldt).

Simia (Midas) ursula Humb., Obs. Zool., I, 1811, (1815), p. 361.

Midas ursulus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 121; I. Geoff., Cat. Primates, 1851, p. 63; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 194; Reichenb., Vollständ. Naturg. Affen, 1862, p. 10, figs. 37, 38; Bates, Natur. Riv. Amaz., II, 1863, p. 321; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 89; Forbes, Handb. Primates, I, 1894, p. 148.

Hapale ursula Wagn., Schreb., Säugth. Suppl., I, 1840, p. 246; V. 1855, p. 135; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 265; Anders., Cat. Mamm., Ind. Mus. Calc., Pt. I, 1881, p. 89.

Midas tamarin Slack, Proc. Acad. Nat. Scien. Phila., 1861, p. 464.

Cercopithecus ursulus Elliot, Bull. Am. Mus. Nat. Hist., N. Y., XXVIII, 1911, p. 342.

NEGRO TAMARIN.

Type locality. Para, Lower Amazon.

Geogr. Distr. Lower Amazon, Para, and near the mouth of the River Tocantins. (Hoffmannsegg).

Genl. Char. Face covered with hair; hands and feet black; ears naked, large.

Color. Head, neck all around, chin, arms, entire under parts, inner side of legs, hands, feet and tail black; back below shoulders and outer side of legs, rayed black and ochraceous, the tips of the hairs being of the latter color.

Measurements. Size of C. MIDAS, tail shorter, 407. Skull: occipito-nasal length, 47; Hensel, 33; zygomatic width, 32; intertemporal width, 23; palatal length, 16; width of braincase, 28; median length of nasals, 7; length of upper molar series, 9; length of mandible, 31; length of lower molar series, 10.

"In the vicinity of Para," says Mr. Bates, (l. c.) "the only monkey I saw frequently was the little *Midas ursulus*." It is never seen in large flocks, three or four being the greatest number he had found together. It was less afraid of the neighborhood of man than any other of its Tribe. He at times saw it in the woods bordering the suburban streets, and once saw two in a thicket behind the house of the English Consul at Nazareth. Its mode of travelling along the boughs of the lofty trees resembled a Squirrel, and it does not go on the slender branches, nor make flying leaps, but confines itself to the larger boughs and to the trunks of the trees, its long nails enabling it to cling securely to the bark, and it often rapidly encircles the trunks of the perpendicular trees. It is quick, restless and timid, and has much curiosity, for should a person pass under the trees on which a flock of these little creatures is running, they always stop to stare at the intruder. In Para, it is often seen tamed in the houses, but when first captured, or tied up, it is very timid and irritable, not allowing itself to be approached, but retreating when any one draws near.

When treated kindly, however, as it generally is in the houses of the natives, it becomes very tame and familiar. He once saw one as playful as a kitten running after the negro children and fondled by them. It did not like strangers to sit in the hammock which was hung in the room, and tried to bite them. It fed on bananas and insects, especially spiders and grasshoppers. This little monkey has a very intelligent and pleasant face, and when its curiosity is excited, it inclines its head to one side and has a very knowing expression. Although the absence of convolutions in the brain would seem to indicate a low type, Bates considered this a very unsafe guide, for in mobility of expression and general ways, he considered these small monkeys resembled the higher Apes, more than any other Rodent animal with which he was acquainted.

GENUS LEONTOCEBUS. TAMARINS.

$$\text{I. } \tfrac{2-2}{2-2}; \quad \text{C. } \tfrac{1-1}{1-1}; \quad \text{P. } \tfrac{3-3}{3-3}; \quad \text{M. } \tfrac{2-2}{2-2} = 32.$$

LEONTOCEBUS Wagn. Schreb., Säugth. Suppl., I, 1839, pp. 12, V bis. (248). Type *Hapale chrysomelas* Wied.

Midas Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 120, (nec Latreille, Dipt., 1796).

Leontopithecus Less., Spec. Mamm., 1840, p. 268.

Marikina Reichenb., Vollständ. Naturg. Affen, 1862, p. 57, pl. II, figs. 25-31.

Tamarin Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 68.

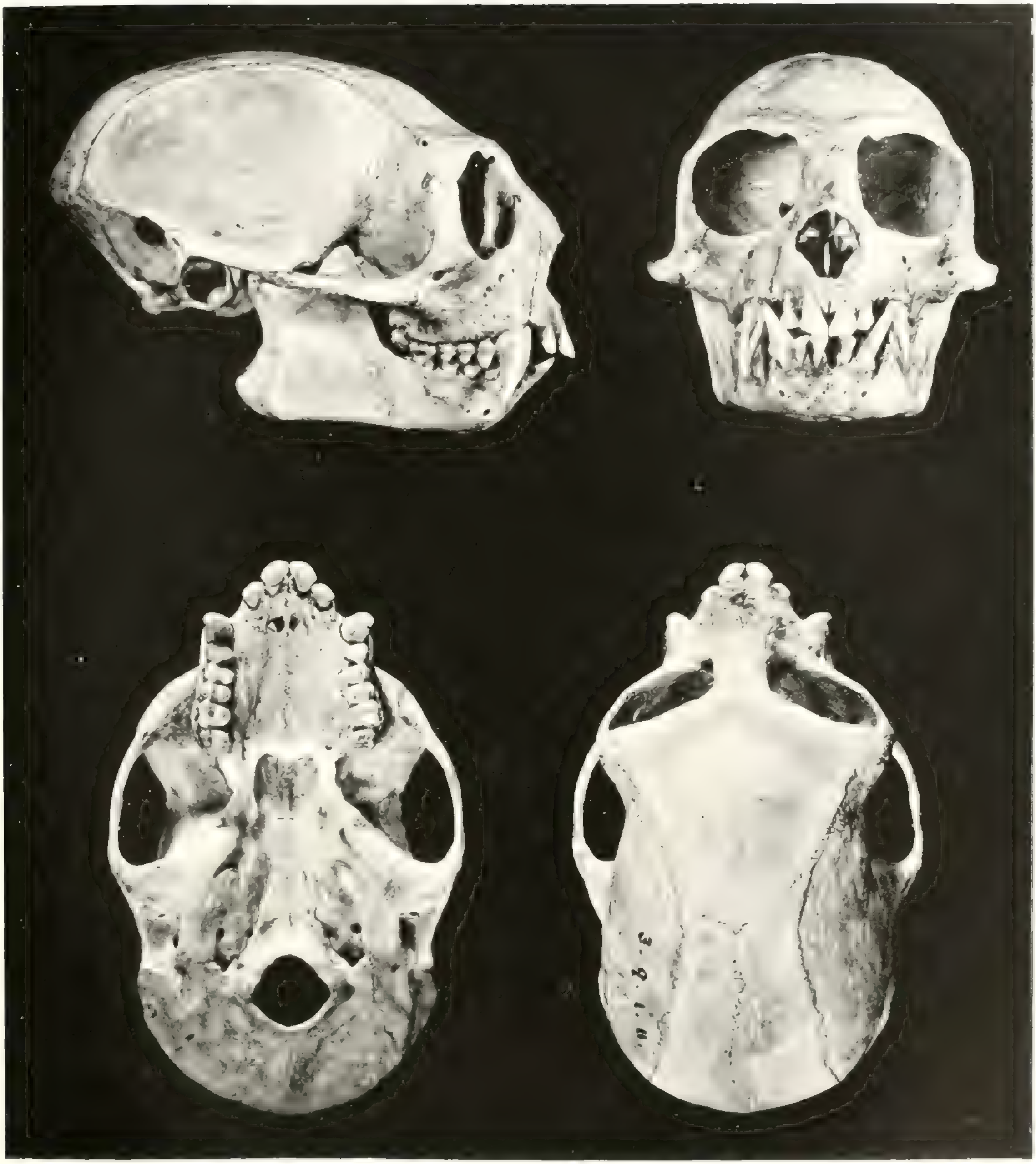
Tamarinus Trouess., Cat. Mamm. t. Viv. z. Foss., Quinz. Suppl., p. 29.

"Cauda haud annulata, auriculis non penicillatis, facie juba longa erectili circumcincta" (Wagner).

Hair on head and neck long, forming a ruff; tail as long as the body, tip bushy; lower canine teeth longer than the incisors; patch of white hairs around the mouth, except in species of subgenus *Marikina.*

KEY TO THE SPECIES.

- A. Tail black or mostly black, lips white.
  - *a.* Head black.
    - *a.′* Head with median stripe.
      - *a.″* Stripe narrow, brown, greenish at occiput .... *L. labiatus.*
      - *b.″* Stripe broad, red .... *L. pileatus.*
    - *b.′* Head without median stripe.
      - *a.″* Back dark grayish brown, legs blackish brown washed with gray.......... *L. thomasi.*
      - *b.″* Back blackish chestnut speckled with red .... *L. nigrifrons.*
      - *c.″* Back black.
        - *a.‴* Legs bright reddish chestnut.... *L. nigricollis.*
        - *b.‴* Legs rusty red .... *L. chrysopygus.*



LEONTOCEBUS MYSTAX.

No. 3.9.1.11. Brit. Mus. Coll. Larger than Nat. Size.

    - *d.*″ Back black and tawny .... *L. mystax.*
    - *e.*″ Back black and reddish brown .... *L. weddeli.*
    - *f.*″ Back black and buff.
      - *a.*‴ Mantle black .... *L. devillii.*
      - *b.*‴ Mantle chestnut .... *L. apiculatus.*
      - *c.*‴ Mantle dark liver brown .... *L. illigeri.*
    - *g.*″ Back dark gray.
      - *a.*‴ Mantle golden yellow .... *L. tripartitus.*
      - *b.*‴ Mantle dark ferruginous .... *L. lagonotus.*
  - *c.*′ Head buffy yellow .... *L. fuscicollis.*
  - *d.*′ Head black and gray speckled .... *L. graellsi.*
  - *e.*′ Head on top black and hazel, sides black. .*L. imperator.*
- B. Tail golden yellow, lips not white.
  - *a.*′ Head and arms golden yellow.
    - *a.*″ Body golden yellow .... *L. rosalia.*
    - *b.*″ Body ochre yellow annulated with black *L. leoninus.*
    - *c.*″ Body black .... *L. chrysomelas.*

Subgenus Tamarinus.

Mane moderate; lips white.

LEONTOCEBUS LABIATUS *(E. Geoffroy).

Midas labiatus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 121; *Id.* Cours Hist. Nat. Mamm., 1828, p. 36, 10me Leçon; Tschud., Faun. Peruan., 1844, p. 53; I. Geoff., Cat. Primates, 1851, p. 63; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 189, 194; Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 464; Forbes, Handb. Primates, I, 1894, p. 141.

Simia (Midas) labiatus Humb., Rec. Obs. Zool., I, 1811, (1815), p. 361.

Marikina labiatus Reichenb., Vollständ. Nat. Affen, 1862, p. 11, fig. 39.

Jacchus labiatus Desm., Mamm., 1820, p. 95.

Midas rufiventer Gray, Ann. Mag. Nat. Hist., XII, 1st Ser., 1843, p. 398; *Id.* Proc. Zool. Soc. Lond., 1865, p. 735; *Id.* Voy. Erebus and Terror, Zool., 1844, pl. XVIII; *Id.* Voy. Sulphur, 1844, pl.; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats,

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*Geoffroy in his paper calls this an "Espèce inédite," and does not quote Humboldt's work, which he always does if Humboldt had previously provided a name.

Brit. Mus., 1870, p. 66; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 129; Reichenb., Vollständ. Naturg. Affen, 1862, p. 11, fig. 40.

Midas elegantulus Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 463.

Midas erythrogaster Reichenb., Vollständ. Naturg. Affen, 1862, p. 14.

Hapale labiata Wagn., Schreb., Säugth. Suppl., I, 1840, p. 246; V, 1855, p. 130; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 260.

Midas griseoventris Goeldi, Proc. Zool. Soc. Lond., 1907, p. 90, fig. 22?

WHITE-LIPPED TAMARIN.

Type locality. "le Brésil?" Type in Paris Museum.

Geogr. Distr. Forests on north side of the Amazon; Rio Javari, (Schlegel); Rio Solimoens, (Natterer); Peru, (Tschudi).

Genl. Char. General color dark reddish brown; lips white; mane absent.

Color. Head black, with a median brown stripe on the crown, becoming broader and greenish in color on occiput; lips white; arms to elbows, legs to ankles, and upper parts of body dark reddish brown, almost blackish on dorsal region; forearms, hands and feet, black; under parts and inner side of limbs, rich orange red; tail, tawny at base beneath, remainder black with a purplish tinge; ears black. Ex type Paris Museum.

Measurements. Total length, about 415; tail, 205. Skull in the type.

The above description gives the present appearance of the type of this species. While it has undoubtedly faded somewhat in the more brilliant and delicate colors, its general aspect cannot have changed much, and what is now dark brown was never black as given by most authors as the color of the body; for the head, hands, feet and tail are as black as they probably ever were; the tail alone showing a purplish tint which no doubt always existed. The brilliant orange red of the under parts still remains where the hairs have not disappeared.

Measurements. Total length, 520; tail, 390, (skin). Skull: occipito-nasal length, 46; Hensel, 31; palatal length, 15; intertemporal width, 23; médian length of nasals, 8; length of upper molar series, 9; length of mandible, 28; length of lower molar series, 11.

The type of *Midas rufiventer* Gray, is like L. LABIATUS but has a small gray spot on the crown between the ears and the nape. This is probably an individual peculiarity, and is the only difference in color between the example and specimens of L. LABIATUS, and is hardly sufficient to be regarded as a distinctive character. Gray in his description (l. c.) states that this head spot was the same color as the under parts, "chestnut brown." At present it is gray, as above stated, and must have faded considerably. The under parts are now ochraceous rufous, and this part, in the intervening sixty or more years, has undoubtedly faded from the more brilliant color of the living animal. It would seem most probable that this example is not distinct from L. LABIATUS. Slack's type of (*M.*) *elegantulus* is in the National Museum, Washington, in excellent preservation. The arms to elbows, and legs to ankles, and upper parts of body are mottled black and buff, not dark reddish brown or blackish as in the type of L. LABIATUS, but this difference may be caused by age. The rest of the pelage is like that of the type of L. LABIATUS.

Midas griseoventris Goeldi, I have not seen, as there was no example in any European Museum. Its chief character for separating it from the present species appears to be the color of the patch or stripe on the crown which is stated to be white. This certainly is not the color of the patch or stripe on the crown of L. LABIATUS type. Gray's *rufiventer* has now a gray patch on the crown although, as stated above, it was described as chestnut brown. It may be there is a race of L. LABIATUS with a gray or white crown patch, but in such a case it would have to be determined whether Goeldi and Gray's examples represent the same species, and if they do, Gray's name *rufiventer* though a poor one, would take precedence, and comparisons of specimens would be necessary to decide this. For the present, therefore, I place Goeldi's name among the synonyms of L. LABIATUS with a question mark.

LEONTOCEBUS PILEATUS (I. Geoffroy).

Midas pileatus I. Geoff. et Deville, Compt. Rend., XXVII, 1848, p. 497; *Id.* Cat Primates, 1851, p. 62; *Id.* Archiv. Mus. Paris, V, 1852, p. 569, pl. XXXI; Casteln., Expéd. Amér. Sud, Mamm., 1855, p. 21; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 189, 194; Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 464.

Hapale pileata Wagn., Schreb., Säugth. Suppl., V, 1855, p. 130.

BONNETED TAMARIN.

Type locality. Near Pebas, Upper Amazon, Brazil. Type in Paris Museum.

Geogr. Distr. Upper Amazon, range unknown.

Genl. Char. Similar to L. MYSTAX; hairs of back and limbs with chestnut buff tips.

Color. Line on forehead, sides of the head, hands, feet and tail jet black; edges of lips covered with long white hairs; forehead, top of head, and nape extending to ears, dark ferruginous; between shoulders and flanks, brownish black, hairs tipped with chestnut buff, (white in type); arms above and beneath brownish black, uniform; back black, hairs broadly tipped with ochraceous buff, (white in type); thighs and legs Vandyke brown, darkest on outer edge; under parts of body blackish brown; ears black; tail black. Ex type Paris Museum. The type is possibly a little darker than specimens of this species generally are, but the pale color, such as chestnut buff seen in fresh specimens, has faded to white on the back, between the shoulders and on flanks. Otherwise it still represents the species.

LEONTOCEBUS THOMASI (Goeldi).

Midas thomasi Goeldi, Proc. Zool. Soc. Lond., 1907, I, p. 89.

Type locality. Tunantins, Upper Amazon. Type in British Museum.

Genl. Char. Colors somber, belly orange.

Color. Head, outer side of arms, chin, throat, and upper part of breast, hands, feet, ears and tail, black; neck and upper part of back, burnt umber, rest of upper parts and legs blackish brown marked with gray; inner side of arms and lower part of breast, buff yellow; rest of under parts dark orange. Ex type British Museum.

Measurements. Similar in size to L. LABIATUS.

LEONTOCEBUS NIGRIFRONS (I. Geoffroy).

Midas nigrifrons I. Geoff., Compt. Rend., XXXI, 1850, p. 875; *Id.* Cat. Primates, 1851, p. 64; *Id.* Archiv. Mus. Paris, p. 572; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 192, 196; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 67, var. e; Thos., Proc. Zool. Soc. Lond., 1880, p. 395.

Hapale nigrifrons Wagn., Schreb., Säugth. Suppl., V, 1855, p. 135; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 263.

Midas nigrifrons Reichenb., Vollständ. Naturg. Affen, 1862, p. 13, no fig.; Forbes, Handb. Primates, I, 1894, p. 143.

BLACK-FRONTED TAMARIN.

Type locality. Not given. Type in Paris Museum.

Geogr. Distr. River Javari, border of Brazil and Peru, (Schlegel); Copataza River, Ecuador.

Genl. Char. Fur ringed, and washed with rufous. Tail very long.

Color. A narrow line on forehead above eyes black; top and sides of head, nape and mantle, blackish chestnut speckled with reddish brown; lips and face beneath eyes, white; shoulders, arms, throat and chest, reddish brown speckled with black; back, rump and sides, mottled black and buff; hind limbs reddish brown, base of hairs black; under parts reddish chestnut; hands and feet black; tail at base reddish brown, remainder black, with reddish brown hairs mingled with the black. Ex type Paris Museum.

Measurements. Total length, 620; tail, 330.

This species in certain ways resembles L. NIGRICOLLIS Spix, but does not have the head entirely black like that species, the black being confined to the forehead. There are other differences in the coloration of portions of the body, which influence me to keep the two forms apart, although it is not impossible that eventually they may be proved to be the same species. The type has no locality, but Schlegel states that the specimen in the Leyden Museum was obtained on the Rio Javari, and Thomas received six examples from the Rio Copataza in Ecuador.

LEONTOCEBUS NIGRICOLLIS (Spix).

Midas nigricollis Spix, Simiæ et Vespert. Bras., 1823, p. 28, pl. XXI; Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 464; Reichenb., Vollständ. Naturg. Affen, 1862, p. 12, fig. 42; Forbes, Handb. Primates, I, 1894, p. 145.

Leontocebus ater Less., Spec. Mamm., 1840, p. 205.

Midas rufoniger I. Geoff. et Dev., Compt. Rend., XXVII, 1848, p. 499; I. Geoff., Cat. Primates, 1851, p. 64; Casteln., Expéd. Amér. Sud, Mamm., 1855, pl. V, fig. 3; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 195; Reichenb., Vollständ. Naturg. Affen, 1862, p. 12, no fig.; Bates, Nat. Amaz., II, 1863, p. 323; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 67, var. a.

Hapale nigricollis Wagn., Schreb., Säugth. Suppl., V, 1855, p. 132; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 264.

BLACK AND RED TAMARIN.

Type locality. Banks of the River Solimoens. Type in Munich Museum.

Geogr. Distr. Region of the Upper Amazon. Pebas, Ecuador, (Castelnau and Deville).

Genl. Char. Similar to L. DEVILLII, back uniform black.

Color. Head, neck, ears, throat, chest, arms, hands and feet black; legs bright reddish chestnut, hairs on rump and flanks tipped with same; abdomen and base of tail, reddish chestnut, rest of tail black; white hairs around mouth and beneath eyes. Ex type Munich Museum. Skull in specimen.

Measurements. Similar in size to L. FUSCICOLLIS; tail, 315. Skull: occipito-nasal length, 44; zygomatic width, 26; intertemporal width, 23; palatal length, 13; width of braincase, 27; median length of nasals, 6; length of upper molar series, 11; length of mandible, 26; length of lower molar series, 12. Ex specimen in British Museum.

The type of *Midas rufoniger* I. Geoffroy, in the Paris Museum, agrees perfectly with the above description, except the upper part of the throat is a yellowish brown. This appears to be caused by the paucity of hair on that part, there not being enough black tips, which produce the color for this part, to be spread all over. Wherever the hairs are sufficiently numerous the color is black. Geoffroy's species is without doubt the same as L. NIGRICOLLIS (Spix).

There are two examples of this species in the Munich Museum both marked 'types.' These are in good condition, only slightly discolored by dust, but the dark colors of the pelage have not faded. The skulls of each are in the specimens.

Bates (l. c.) has given a very interesting account of this monkey under the name of *Midas rufoniger* I. Geoff. Its habits are the same as those of C. URSULUS and he imagined it was a form or race of the same stock, modified to suit the altered local conditions under which it lived. One day, he says, while walking along a forest pathway, he saw one of these small creatures which was passing with a number of his fellows, miss his hold and fall head first about fifty feet to the ground. He managed to alight on his hands and feet, however, in the path, and turning quickly around he stared at the intruder on his domain for a few moments, and then bounded away to climb another tree.

LEONTOCEBUS CHRYSOPYGUS (Wagner).

Hapale chrysopyga Wagn., Schreb., Säugth. Suppl., I, 1840, p. 249; V, 1855, p. 138; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 254.

Jacchus chrysopygus Mikan, Delect., fasc. III, fig.

Midas chrysopygus Forbes, Handb. Primates, I, 1894, p. 144.

Marikina chrysopygus Reichenb., Vollständ. Naturg. Affen, 1862, p. 9, fig. 31.

YELLOW-TAILED TAMARIN.

Type locality. Ypanema, Province of Sao Paulo, Brazil.

Geogr. Distr. Known only from the vicinity of Ypanema, Sao Paulo, Brazil.

Color. Head, neck, entire body above and beneath to rump and vent, arms, edge of thighs, hands and feet jet black, with a few white hairs above eyes; rump and thighs golden, grading into rusty red near ankles; base of tail like rump, remainder black. Ex specimen in Leyden Museum.

Measurements. In size about equal to L. NIGRICOLLIS; skull in the example.

This is a black Tamarin, and differs from L. NIGRICOLLIS in having the body all black, and in the different coloring at base of tail. It is rare in collections, and so far as I could learn, has only been procured from the vicinity of Ypanema, Sao Paulo Province, where Natterer obtained it.

LEONTOCEBUS MYSTAX (Spix).

Midas mystax Spix, Simiar. et Vespert. Bras., 1823, p. 29, pl. XXII; I. Geoff., Cat. Primates, 1851, p. 64; Casteln., Expéd. Amér. Sud, Mamm., 1855, p. 21; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 191, 195; Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 104; Reichenb., Vollständ. Naturg. Affen, 1862, p. 12, fig. 4; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 66.

Hapale mystax Wagn., Schreb., Säugth. Suppl., V, 1855, p. 129; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 261.

Type locality. Banks of the Solimoens River, Brazil. Type in Munich Museum.

Geogr. Distr. Forest between the Solimoens and Iça rivers, Brazil.

Color. Head, arms above and beneath, chin, throat, inner side of legs, hands and feet, black; lips white; back of head, and upper part of body and flanks black, the hairs dirty white at base and tipped with tawny, this color hardly perceptible on nape and between the shoulders, but increasing on upper back and flanks, and giving the prevailing tint to these parts; lower back, base of tail, rump, and outer side of legs, reddish chestnut; under parts blackish brown. Ex type Munich Museum. Skull in specimen.

Measurements. Tail, about 390. Skull: occipito-nasal length, 50; Hensel, 36; zygomatic width, 35; intertemporal width, 25; median length of nasals, 7; breadth of braincase, 29; length of upper molar series, 10; length of mandible, 33; length of lower molar series, 11. Ex specimen British Museum.

The type of this handsome species is in the Munich Museum, in fair condition. As is usual with the types of the Authors of the beginning of the last century, the skulls have been left in the skins, and I was obliged to take my measurements from another example.

LEONTOCEBUS WEDDELI (Deville).

Midas weddeli Deville, Rev. Mag. Zool., 1849, p. 55; I. Geoff., Cat. Primates, 1851, p. 64; Casteln., Expéd. Amér. Sud, 1855, p. 23, pl. VI, fig. 2; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 190, 195; Reichenb., Vollständ. Naturg. Affen, 1862, p. 13, no fig.; Forbes, Handb. Primates, I, 1894, p. 143. (Part.).

Midas leucogenys Gray, Proc. Zool. Soc. Lond., 1865, p. 735; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 67.

Hapale weddeli Wagn., Schreb., Säugth. Suppl., V, 1855, p. 134; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 262.

WEDDEL'S TAMARIN.

Type locality. Province of Apolobamba, Bolivia. Type in Paris Museum.

Geogr. Distr. Apolobamba Province, Bolivia. Extent of range unknown.

Genl. Char. Fur of back gray ringed.

Color. Forehead, and sides of face to below angle of mouth, and lips, white; face around eyes and nose bare; hairs on cheeks long, forming whiskers; top of head to nape blackish brown forming a cap; upper back and shoulders reddish brown, center of back black; lower back, rump and hind limbs, golden red; arms blackish brown; under parts yellowish with a red tinge; hands and feet reddish brown; tail jet black. Ex type Paris Museum.

Measurements. Size equal to L. DEVILLII. Skull in type specimen.

This species has been united to L. DEVILLII by some Authors, but it presents too many differences from that form to justify us, with only our present knowledge of the changes that may occur towards the adult state, in uniting them.

The examples are both quite small, and judging from the teeth that show in the open mouth, the type is the younger animal, but the white face, only displayed in the front part of the whiskers of L. DEVILLII, and the general reddish brown color of the pelage, with the absence of mottling on the lower back, cause the two types to appear so different that it would seem best to permit them to remain under different names until we have more knowledge as to the respective changes, if any, which may occur in the coloration of the pelage of L. DEVILLII from the youthful to the adult state.

Measurements. Size equal to L. DEVILLII. Skull in the specimen.

LEONTOCEBUS DEVILLII (I. Geoffroy).

Hapale devilli I. Geoff., Compt. Rend., XXXI, p. 875.

Midas devilli I. Geoff., Cat. Primates, 1851, p. 64; *Id.* Archiv. Mus. Hist. Nat., Paris, V, 1852, p. 570; Casteln., Expéd. Amér. Sud, Mamm., 1855, p. 22, pl. VI, fig. 13; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 191, 195; Reichenb., Vollständ. Naturg. Affen, 1862, p. 13, no fig.; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 67, var. b; Bartl., Proc. Zool. Soc. Lond., 1871, p. 220, pl. XIII.

Hapale devillei Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 262.

Midas leucogenys Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 67.

Midas weddeli Forbes, Handb. Primates, I, 1894, p. 143. (Part.).

DEVILLE'S TAMARIN.

Type locality. Banks of the rivers Ucayali and Huallaga near Sarayaçu, eastern Peru. Type in Paris Museum.

Geogr. Distr. Eastern Peru.

Color. Head, chin, throat, hands, feet and tail except at base, black; back between shoulders, outer side of arms, black, hairs tipped with cinnamon rufous; back black, hairs tipped with buff, giving to this part a mottled appearance; rump, base of tail, and legs inner and outer sides, dark burnt sienna; edge of thighs at and below knee, blackish, hairs tipped with burnt sienna; under parts, from lower part of throat to groin, reddish chestnut. Ex type in Paris Museum.

Measurements. Total length, 530; tail, 340. Skull: occipito-nasal length, 43; Hensel, 31; zygomatic width, 31; intertemporal width, 22;

median length of nasals, 5; breadth of braincase, 26; length of upper molar series, 8; length of mandible, 28; length of lower molar series, 10.

The type of *Midas leucogenys* Gray, is in the British Museum Collection. It is a young animal about half grown, and in all its markings exactly corresponds with the adult (*M.*) DEVILLII Geoffroy. There seems to be no reason whatever to separate it from the present species. The type of L. DEVILLII in the Paris Museum, presents the coloration described, but it has lost much fur from the under parts of the body, and the reddish chestnut of that part is not so pronounced as is shown in recent specimens.

Bartlett, who met with this species in eastern Peru, says (l. c.) it was plentiful on the Peruvian Amazons, and he obtained examples on both the Huallaga and Ucayali rivers. There is but little difference between the sexes, the male being rather larger and darker in color, especially the long hair on nape and neck. It is an extremely delicate animal and will not bear the least cold, and he could only keep them alive for two or three weeks, as they seemed to suffer from cold, and died. The Indian women make pets of them, and allow them to stay amid the long hair on their heads, and thus protected they will live for a long time. Becoming tame they come out and feed, and having captured a spider or two, they scamper back to their refuge amid the luxuriant hair of their owners, who are usually unwilling to part with them.

LEONTOCEBUS APICULATUS (Thomas).

Midas apiculatus Thos., Ann. Mag. Nat. Hist., 7th Ser., 1904, p. 189.

Type locality. Banks of the Copataza River, Ecuador. Type in British Museum.

Genl. Char. Differs from L. DEVILLII in having the mantle chestnut, not black.

Color. Head, throat, hands and feet black; lips white; long hairs on neck and between shoulders forming a mantle, chestnut; back black mottled with gray, tips of hairs having that color; arms and legs, and under parts reddish brown; blackish brown on chest; tail reddish brown at base, rest black. Ex type British Museum.

Measurements. Size similar to L. ILLIGERI. Skull: occipito-nasal length, 43; intertemporal width, 22; zygomatic width, 29; palatal length, 13; breadth of braincase, 25; median length of nasals, 5; length of upper molar series, 8; length of mandible, 26; length of lower molar series, 10. Ex type British Museum.

LEONTOCEBUS ILLIGERI (Pucheran).

Hapale illigeri Pucher., Rev. Mag. Zool., 1845, p. 336; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 134.

Midas devillii Sclat., Proc. Zool. Soc. Lond., 1871, p. 20, pl. VIII, (nec I. Geoffroy).

Hapale illigeri Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 263.

Midas illigeri I. Geoff., Cat. Primates, 1851, p. 65; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 192, 196; Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 464; Reichenb., Vollständ. Naturg. Affen, 1862, p. 13, no fig.; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 67, var. d; Thos., Proc. Zool. Soc. Lond., 1880, p. 395.

Œdipomidas illigeri Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 554, Zool. Ser.

ILLIGER'S TAMARIN.

Type locality. Colombia.

Geogr. Distr. Colombia; banks of the Copataza River, Ecuador, (Thomas). Type in Paris Museum.

Genl. Char. Hairs on upper back very long, forming a mantle.

Color. Male. Forehead between eyes, face beneath eyes and upper and lower lips, white; head, hands, feet, inner side of arms and tail except at base, black; upper part of back and shoulders, liver brown speckled with black; outer side of arms, and under part of body dark liver brown slightly speckled with black; lower back black, hairs broadly tipped with ochraceous; sides of rump and legs, and base of tail, dark reddish, but lighter than upper back. Ex type Paris Museum.

Female. Resembles the male, but the hair on upper back is shorter, and the arms, legs, and under parts are a lighter and brighter red.

Measurements. In size about equal to L. LABIATUS; tail, 380. Skull: occipito-nasal length, 46; zygomatic width, 31; intertemporal width, 24; palatal length, 15; breadth of braincase, 26; median length of nasals, 6; length of upper molar series, 8; length of mandible, 31; length of lower molar series, 10.

The type of this species is believed, according to Pucheran (l. c.) to have come from Colombia, and Thomas has received specimens from the banks of the Copataza River, Ecuador. It has generally been given as from eastern Peru, but it is probable that the examples from that portion of South America were not this species, but L. WEDDELI.

LEONTOCEBUS TRIPARTITUS (A. Milne-Edwards).

Midas tripartitus A. Milne-Edw., Archiv. Mus. Paris, 2me Sér., I, 1878, p. 161, pl. VIII.

Type locality. Banks of the Rio Napo, Ecuador. Type in Paris Museum.

Genl. Char. Remarkable for the black head, golden shoulders and upper back.

Color. Head to nape all around, and throat to chest, black; back of neck, and shoulders to middle of flanks, golden yellow; rest of upper parts and thighs to knees, iron gray; arms, outer and inner sides, under parts and inner side of legs, and outer side below knees, orange red; hands and feet dark reddish brown mixed with gray; face bare, lips covered with long white hairs; tail reddish chestnut for basal fourth, remainder black. Ex type Paris Museum.

Measurements. Total length, about 460; tail, 200. Skull: occipito-nasal length, 45; palatal length, 15; zygomatic width, 31; intertemporal width, 22; median length of nasals, 7; length of upper molar series, 9; length of mandible, 29; length of lower molar series, 10. Ex type Paris Museum.

This strikingly colored species, so unlike any of the genus, is recognizable at once. The jet black head and throat, contrasted with the bright colors of the body make it most conspicuous. The type in the Paris Museum has retained its color so far remarkably well, and it is to be regretted that it should be permitted to remain exposed to the sunlight which will eventually destroy most of the coloring, which now eminently distinguishes it from the other species of the genus.

LEONTOCEBUS LAGONOTUS (Espada).

Midas lagonotus J. de la Espada, Bol. Revista Univ. Madrid, 1870, p. 57; A. Milne-Edw., Nouv. Archiv. Mus. Paris, Hist. Nat., I, 1878, p. 161, (note); Cabrera, Anal. Soc. Esp. Hist. Nat., XXIX, 1900, p. 31.

Type locality. Upper Amazon. Type in Madrid Museum.

Genl. Char. Differing especially from L. TRIPARTITUS in having the mantle dark ferruginous, not golden.

Color. Head black; mantle, arms and legs dark ferruginous; back dark gray and black; under parts, hands, feet and tail black; base of tail dark hazel. From a drawing in color of type in Madrid Museum. Face bare, purplish?, or black; edges of lips apparently white.

"M. Capite, gula, podiis, brachiis, intus, caudaque, basi excepta, aterrimis nitidis; pectore, abdomonique ex rufo nigroquemixtis; dorso, lumbis, coxibrunneo intenso fere nigro et albo, coxim versus et scapulas flavescente variegatis, ceteris, castaneo rutilanti ornatis; piliis vultum circumdantibus longis auriculas obtegentibus maxtace atque myxtace albis aut palidilis." Espada desc. Ex Milne-Edw.

Color. "del dorso y los costados variedo da amarillento y negruzco, como el de las liebres. Los pelos de la cabeza muy largos y de un negro brillante, lo mismo que la garganta, la parte interna de los brazos, los manos y los pies. Las espaldillas, los brazos par fuera y los miembros posteriores de collor rojo encendido tirando a lemado en medio de los hombros; en el pecho y el vientre este color rojo esta mezclado con negro; la cola es en su reiz mismo color que el dorso, roya despues en un corto espacio y negra en el resto sobre la cara, que es de color cardeno y esta a medias cubierta de pelillos negros y blanquecinos, se destaca el pelo blanco que rodea la boca y les aberturas nasales.

"Longitud deade et hocico a la raiz de la cola. O, 235 mm. der la cola, 32." Cabrera (l. c.).

LEONTOCEBUS FUSCICOLLIS (Spix).

Midas fuscicollis Spix, Sim. et Vespert. Bras., 1823, p. 27, pl. XX.

Midas flavifrons I. Geoff. et Deville, Compt. Rend., XXVII, 1848, p. 499; *Id.* Cat. Primates, 1851, p. 64; Casteln., Expéd. Amér. Sud, Mamm., 1855, tab. VI, fig. 1; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 188, 193; Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 464; Reichenb., Vollständ. Naturg. Affen, 1862, p. 13, no fig.; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 67.

Midas devillei Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 464, (nec I. Geoffroy).

Hapale fuscicollis Wagn., Schreb., Säugth. Suppl., V, 1855, p. 131; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 264.

Hapale chrysomelas Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 254, (nec Kuhl).

BROWN-HEADED TAMARIN.

Type locality. Between the Iça and Solimoens rivers, Brazil. Type in Munich Museum.

Geogr. Distr. Between the Iça and Solimoens rivers in Brazil;

and vicinity of Pebas, Peruvian Amazons; and the banks of the Javari River, boundary between Brazil and Peru.

Genl. Char. Pelage mostly brown and black; head and face buff yellow.

Color. Forehead, and top of head buff yellow, some hairs ochraceous, graduating into burnt umber on sides of head and back between shoulders, outer side of arms, and throat; lips white; back black, the hairs broadly tipped with buff; rump, legs, and under parts reddish chestnut; hands and feet black; tail at base like rump, remainder black.

Measurements. Similar in size to *L. labiatus;* tail, 265. Skull: occipito-nasal length, 43, (broken); intertemporal width, 22; breadth of braincase, 26; palatal length, 14; median length of nasals, 7; length of upper molar series, 8; length of mandible, 30; length of lower molar series, 10. Ex specimen British Museum.

The type in the Munich Museum has lost most of the hair on the top and sides of the head, and on arms to elbow; the left arm is practically bare for entire length, as is also the hand. The hair is mostly gone from the under side of the body. It therefore would not serve to describe the species, and one was selected for this purpose from the British Museum Collection. The skull is in the type specimen.

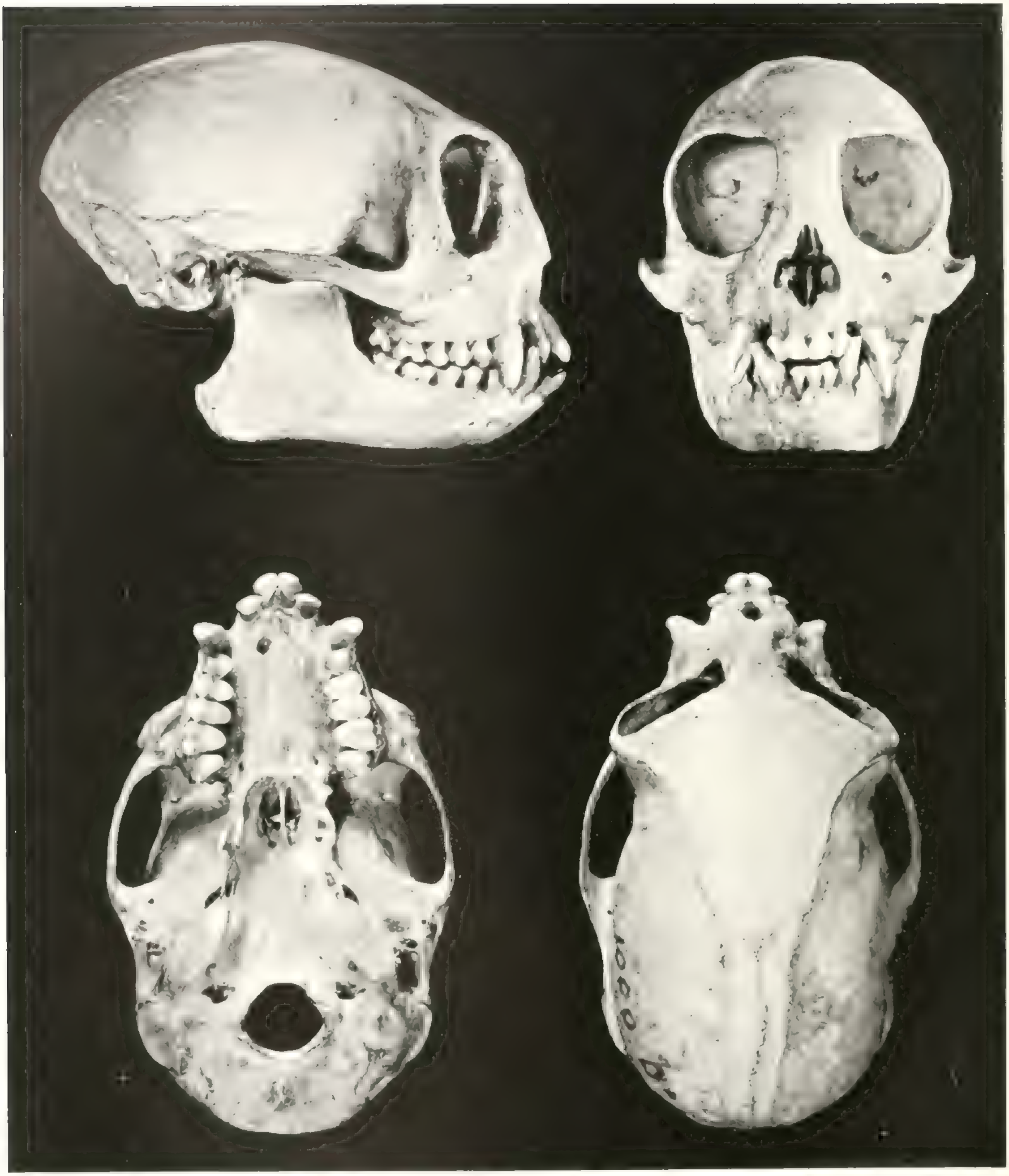
LEONTOCEBUS GRAELLSI (Espada).

Midas graellsi J. de la Espada, Bol. Revista Univ. Mad., 1870, *β.* 57; Milne-Edw., Archiv. Mus. Paris, I, 1878, p. 162, (note).

RIO NAPO MARMOSET.

Type locality. Banks of the Rio Napo, Ecuador. Type in Madrid Museum.

Color. Nose, forehead and center of head black; from eyes to ears and on cheeks, light chestnut; back of head, nape, back between shoulders, outer and inner sides of arms, and throat to breast black, hairs tipped with gray and darkest on dorsal region, giving this part a speckled brown appearance; back and flanks mummy brown, hairs tipped with gray, giving a grayish brown tint to these parts; rump tawny brown, the hairs being black at base, then tawny and tips grayish brown; thighs, and legs to ankles speckled brown and ochraceous buff, the latter color being the tips of the hairs; tail at base fuscous, more clear brown than the rest of the pelage, and this color extends along the tail beneath for one third its length, remainder of tail, hands and feet black; breast and abdomen blackish chestnut brown, hairs tipped with yellowish; inner sides of legs russet, the hairs being blackish at base tipped with russet.



LEONTOCEBUS ROSALIA.

No. 1000 B. Brit. Mus. Coll. [illegible] Larger than Nat. Size.

A co-type of this species is in the British Museum Collection. It is peculiarly colored and very difficult to describe. The general appearance is that of a grayish brown creature with a black head and neck, and speckled with lighter brown on the body and hind legs. The base of the tail is lighter than the body, and the fur generally is so shiny that the color is very difficult to see, and varies constantly according as the light shines upon it. Unfortunately no skull accompanied the skin.

LEONTOCEBUS IMPERATOR (Goeldi).

Midas imperator Goeldi, Proc. Zool. Soc. Lond., I, 1907, p. 93, fig. 23.

Type locality. Rio Purus, tributary of the Amazon, western Brazil.

Genl. Char. Moustache of long white hairs extending beyond the face to the ears; tail longer than body.

Color. Sides of head, face, hands, and tufts on ears black; middle and back of head black and hazel mixed; lips white, from upper lip extends a long white moustache; throat black and gray; upper part of body, arms and outer side of legs buffy gray, the hair being black with buff tips; breast, lower part of belly, and inner side of legs, pale burnt sienna; middle of belly pale vinaceous cinnamon; tail above black, beneath burnt sienna at base, graduating into pale reddish brown, and then into black for apical half. Ex specimen British Museum.

Subgenus Marikina.

Mane large; lips not white.

LEONTOCEBUS ROSALIA (Linnæus).

Simia rosalia Linn., Syst. Nat., I, 1766, p. 41; Schreb., Säugth., I, 1775, p. 130, pl. XXXV; Shaw, Genl. Zool., I, 1800, p. 64, pl. XXV, fig.

Callithrix rosalia E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 121; *Id.* Cours Hist. Nat. Mamm., 1828, p. 36, 10me Leçon; I. Geoff., Cat. Primates, 1851, p. 62; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 188, 192; Gulliv., Proc. Zool. Soc. Lond., 1875, p. 493.

Jacchus albifrons Desm., Mamm., Suppl., 1820, p. 534.

Leontocebus pithecus marikina Less., Spec. Mamm., 1840, p. 200.

Marikina albifrons Reichenb., Vollständ. Naturg. Affen, 1862, p. 9, pl. II, figs. 29, 30.

Marikina rosalia Reichenb., Vollständ. Naturg. Affen, 1862, p. 7, figs. 25, 27.

Midas leoninus Bates, Nat. Amaz., I, 1863, p. 98, (nec Wagner).

Leontopithecus rosalia Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 65.

Hapale rosalia Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 250.

Type locality. "In Brasilia."

Geogr. Distr. Forest of southeastern Brazil, Province of Rio de Janeiro; Upper Amazon.

Genl. Char. Conspicuous ruff around face and neck; tail bushy at tip, as long as body. Sometimes the pelage varied with black, this color appearing on the head, hands, feet and tail.

Color. General color of head, body and limbs golden yellow, darkest on head and limbs, and palest on tail; face, hands and feet purple; long tufts of hair from inside of ears brownish black.

Measurements. Tail to end of hairs, 345. Skull: occipito-nasal length, 53; Hensel, 39; zygomatic width, 35; intertemporal width, 23; median length of nasals, 11; breadth of braincase, 28; length of palate, 17; length of upper molar series, 12; length of mandible, 38; length of lower molar series, 13.

Bates, (l. c.) says he once saw a tame individual of *M. leoninus* = L. ROSALIA?, which was even more playful and intelligent than (*M.*) URSULA. In length of body it measured only seven inches, and was friendly with every one in the house where it lived, and its greatest pleasure was to climb about the persons of those who entered. When he first visited the house, it ran to the chair on which he was sitting and climbed on to his shoulder, and looking into his face showed its teeth and chattered as though it would say, "Well, and how do you do?" It was very affectionate with its master and would climb upon his head a dozen times in an hour, and make a great show of searching for certain animalculæ. Of this species Isidore Geoffroy Saint-Hilaire knew of one individual that distinguished between different objects in an engraving. When shown figures of a cat and wasp, it was very much frightened, but when it saw a grasshopper or beetle, it precipitated itself on the picture and tried to seize them.

LEONTOCEBUS LEONINUS (Humboldt).

Simia leonina Humb., Obs. Zool., I, 1811, (1815), pp. 16, 361, pl. V.

Hapale leonina Wagn., Schreb., Säugth. Suppl., I, 1840, p. 249; V, 1855, p. 138; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 255.

Leontopithecus leoninus Reichenb., Vollständ. Naturg. Affen, 1862, p. 6, fig. 24.

LION TAMARIN.

Type locality. Seen at Popayan, Brazil. No specimen preserved.

Color. General hue ochre yellow shading into olive brown, annulated with black; back varied with yellow; hands and feet black, face black; around the nose and mouth bluish white.

Measurements. Total length 7 to 8 inches.

No specimens of this monkey have been procured. Humboldt saw two living individuals at Popayan and from these he made his description and gave the name of LEONINA (l. c.). It inhabits the plains of Mocoa, and the fertile banks of the Iça and Japura rivers, never goes into temperate regions, and is rare even in the country it inhabits.

Whether these specimens represent a distinct species, or some state of pelage of L. ROSALIA, or a dark form of that species it is impossible to state, and any decision regarding it will have to be deferred until examples are procured.

LEONTOCEBUS CHRYSOMELAS (Kuhl).

Midas chrysomelas Kuhl, Beitr., 1820, p. 51; Tschudi, Faun. Peruan., 1844, p. 53; I. Geoff., Cat. Primates, 1851, p. 62; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., 1856, pp. 188, 192; Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 464.

Jacchus chrysomelas Desm., Mamm., 1820, p. 95.

Leontocebus ater var. B. Less., Spec. Mamm., 1840, p. 205.

Marikina chrysomelas Reichenb., Vollständ. Naturg. Affen, 1862, p. 8, fig. 28.

Leontopithecus chrysomelas Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 65.

WIED'S TAMARIN.

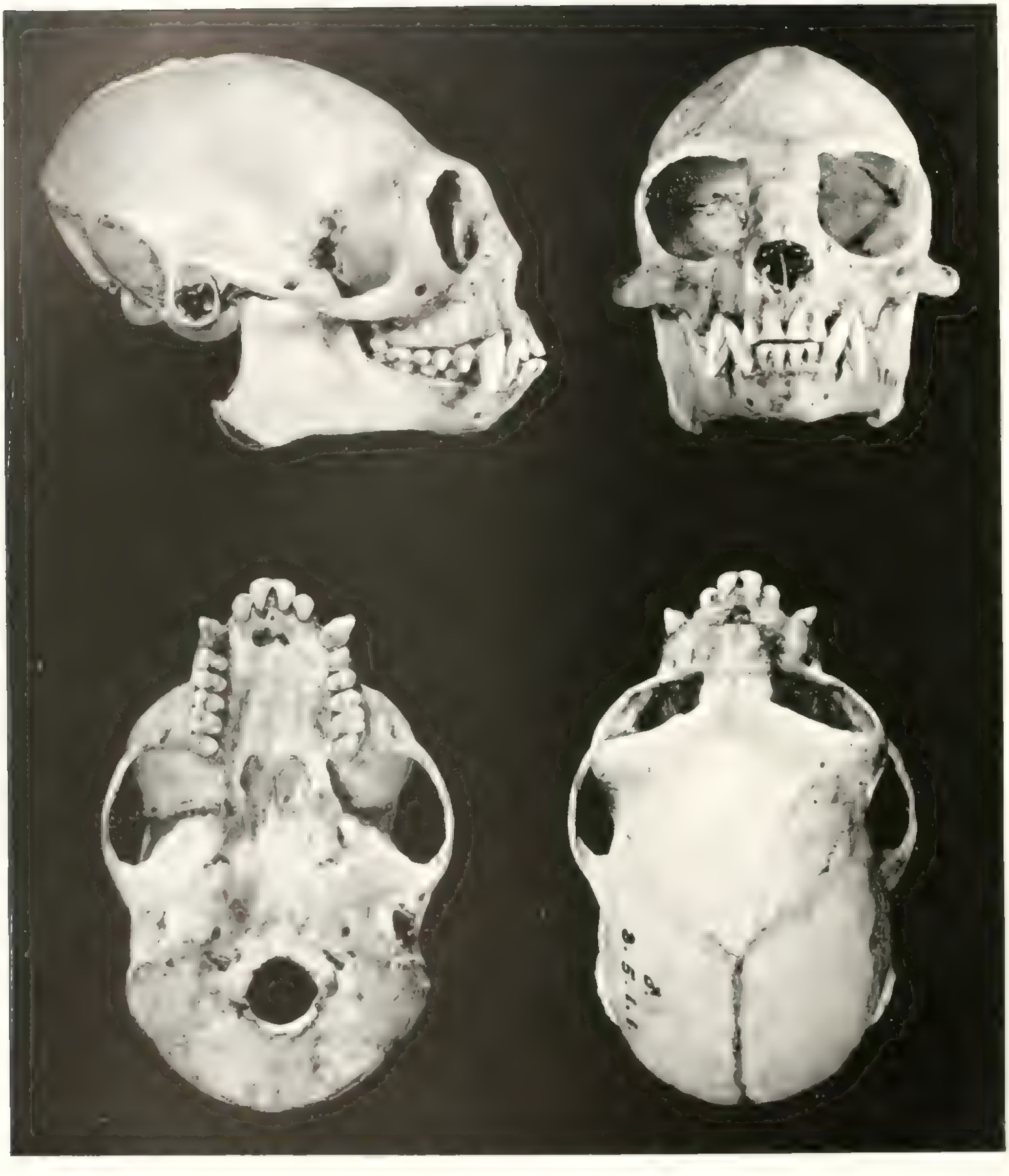
Type locality. Forests through which the Rio Ilhéos flows, Brazil. Type in American Museum of Natural History, New York.

Geogr. Distr. Forests of the Rio Ilhéos, and Rio Pardo, Brazil; Peru, (Tschudi).

Color. Forehead, sides of head and chin, throat, and arms from elbows to hands, golden yellow, darkest on throat and towards sides of neck, where the long hairs fall over; the hairs on the forehead have faded to a pale yellow; occiput, back and sides of neck, shoulders, arms to elbows, mantle, under parts of body, inner side of hind limbs, and ankles, black; lower back, rump, outer side of hind limbs to ankles, reddish chestnut; feet above mixed tawny and black; edges reddish chestnut; tail above on basal half pale yellow, faded from golden yellow; sides black. Ex type American Museum of Natural History, New York.

Measurements. Total length to end of hairs on tail, 670; tail, 300; foot, 75. Skull in specimen.

Kuhl describes this species from specimens brought by Prince Max. of Wied from Brazil. Some of these were distributed to the Berlin Museum, and to M. Temminck. The above description is taken from the male example in Prince Max.'s Collection purchased by the New York Museum and presumably the type, as it is not supposed that the type of Kuhl's description would be permitted to leave the collection. It is in good preservation but the delicate yellow has faded considerably.



ŒDIPOMIDAS ŒDIPUS.

No. [illegible] Brit. Mus. Coll. [illegible] larger than Nat. Size

GENUS ŒDIPOMIDAS. MARMOSETS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{3-3}{3-3}; \quad \text{M. } \frac{2-2}{2-2} = 32.$$

ŒDIPOMIDAS Reichenb., Vollständ. Naturg. Affen, 1862, p. 5, pl. II, figs. 18-20. Type *Simia œdipus* Linnæus.

Œdipus Less., Spec. Mamm., 1840, pp. 184, 197-200, (nec Tschudi, 1838, Amphib.).

Head sometimes crested; sides of head naked or covered with short hairs, hairs on nape elongate. Size small.

KEY TO THE SPECIES.

A. Hair on nape elongate; arms and outer side of legs, white.
  - *a.* Head crested, top of head and nape white........*O. œdipus.*
  - *b.* Head not crested, center of head white, nape burnt umber ....*O. geoffroyi.*

Œdipomidas œdipus (Linnæus).

Simia œdipus Linn., Syst. Nat., I, 1758, p. 28; I, 1766, p. 41; Schreb., Säugth., I, 1775, p. 128, pl. XXXIV; Bodd., Elench. Anim., 1784, p. 63; Audeb., Singes et Makis, Fam. VIme Sec., II, 1797, pl. III.

Callithrix œdipus Erxl., Syst. Reg. Anim., 1777, p. 55.

Simia (Midas) œdipus Humb., Rec. Obs. Zool., I, 1811, (1815), p. 361.

Midas œdipus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 122; F. Cuv., Hist. Nat Mamm., 1833, p. 200, pl. LXXII; I. Geoff., Cat. Primates, 1851, p. 62; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 193; Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 464; Forbes, Handb. Primates, I, 1894, p. 140.

Jacchus œdipus E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 36, 10me Leçon.

Œdipus titi Less., Spec. Mamm., 1840, p. 197; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 65.

Hapale œdipus Wagn., Schreb., Säugth. Suppl., I, 1840, p. 251; V, 1855, p. 138; Blainv., Ostéog., 1841, Atl., Cebus IV;

Mivart, Proc. Zool. Soc. Lond., 1865, p. 587, (footnote); Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 258.

Œdipomidas œdipus Reichenb., Vollständ. Naturg. Affen, 1862, p. 5, figs. 18-20.

Leontopithecus œdipus Thos., Proc. Zool. Soc. Lond., 1911, p. 127.

PINCHÉ MARMOSET.

Type locality. "In America."

Geogr. Distr. Cartagena and Turbaco, coast of Colombia.

Genl. Char. Sides of head naked; top of head crested.

Color. Face covered with short white hairs, sides of head naked; top of head, nape and neck, arms to shoulders, outer side of legs, hands and feet white; upper parts grayish brown; thighs bright hazel, the hairs tipped with gray, giving this part a tint or wash of that color; entire under parts and inner side of limbs white; tail, basal half bright hazel, remainder blackish seal brown.

Measurements. Skull: occipito-nasal length, 45; Hensel, 32; zygomatic width, 32; intertemporal width, 23.5; palatal length, 14; breadth of braincase, 27; median length of nasals, 6; length of upper molar series, 9; length of mandible, 31; length of lower molar series, 11.

ŒDIPOMIDAS GEOFFROYI (Pucheran).

Hapale geoffroyi Pucher., Rev. Mag. Zool., 1845, p. 336; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 251; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 258.

Midas œdipus var. Spix, Simiar. et Vespert. Bras., 1823, p. 30, pl. XXIII.

Midas geoffroyi I. Geoff., Cat. Primates, 1851, p. 63; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 89, 193; Slack, Proc. Acad. Nat. Scien. Phil., 1861, p. 464; Sclat., Proc. Zool. Soc. Lond., 1871, p. 478, pl. XXXVIII; 1872, p. 8; Alston, Biol. Centr. Amer., I, Mamm., 1879, p. 17; Forbes, Handb. Primates, I, 1894, p. 139, pl. XIII.

Midas spixi Reichenb., Vollständ. Natur. Affen, 1862, fig. 2.

Œdipus geoffroyi Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 65.

Œdipomidas geoffroyi Reichenb., Vollständ. Naturg. Affen, 1862, p. 5, no fig.; Elliot, Mamm. Middle Amer. and West Indies, Field Columb. Mus. Pub., IV, Pt. II, 1904, p. 724, figs. 164, CXXXVII, Zool. Ser.; *Id.* Check List Mamm. N. Amer.

Cont. and West Indies, Field Columb. Mus. Pub., p. 532, Zool. Ser.

GEOFFROY'S MARMOSET.

Type locality. Panama. Type in Paris Museum.

Geogr. Distr. Costa Rica and Panama, Central America.

Genl. Char. Head not crested; face hairy.

Color. Face and head covered with short white hairs; center of head from forehead white; back of head and neck burnt umber; forearms, and arms inside to shoulders white; upper parts, extending to elbows on outer half of arms, shoulders and flanks, black mottled with yellowish white; this mottling is caused by the yellowish white band on the black hairs showing; under parts and inner side of limbs white; hands and feet gray; tail reddish or bright burnt umber on basal third, remainder black. Ex type Paris Museum.

Measurements. Skull: occipito-nasal length, 44; Hensel, 29; intertemporal width, 22; zygomatic width, 28; palatal length, 13; breadth of braincase, 22; median length of nasals, 5; length of upper molar series, 10; length of mandible, 26; length of lower molar series, 11.

The type of *Midas spixi* Reichenbach, is in the Munich Museum and is, as was supposed, a specimen of ŒDIPOMIDAS GEOFFROYI (Pucheran).

(Note) For description of Œ. SALAQUIENSIS, see Appendix Vol. III, p. 255.

GENUS CALLITHRIX. TRUE MARMOSETS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{3-3}{3-3}; \quad \text{M } \frac{2-2}{2-2} = 32.$$

CALLITHRIX Erxl., Syst. Regn. Anim., 1777, p. 55. Type *Simia jacchus* Linnæus.

Sagoinus Kerr, Anim. Kingd., Mamm., I, 1792, p. 80.

Sagouin Lacépèd., Tabl. Mamm., 1799, p. 4.

Hapale Illig., Prodr. Syst. Mamm. et Avium, 1811, p. 71.

Jacchus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 118.

Sylvanus Rafin., Analys. Natur., 1815, p. 53, (nec Latreille 1807, Coleopt.).

Arctopithecus Virey, Nouv. Dict. Hist. Nat., ed. nouv., XXXI, 1819, p. 279.

Ouistitis Burnett, Quart. Journ. Scien. Litt. and Arts, 1828, XXVI, p. 307.

Liocephalus Wagn., Schreb., Säugth. Suppl., I, pp. IX, V bis, (244-248).

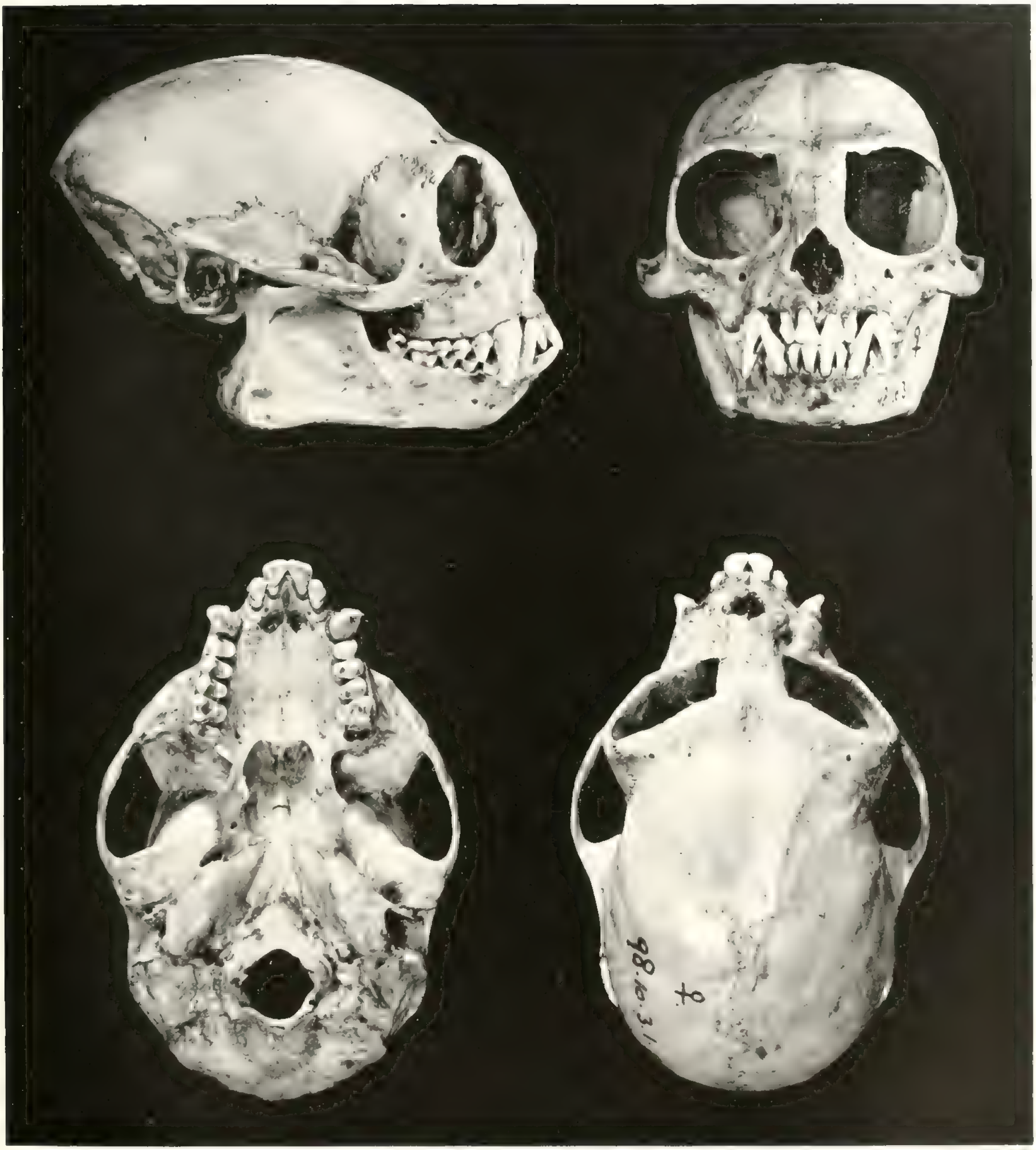
Mico Less., Spec. Mamm., 1840, pp. 184, 192-194.

Cebuella Gray, Proc. Zool. Soc. Lond., 1865, p. 734.

Micoella Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 130.

Head round; eyes large; face naked; ears large, sometimes fringed with hair. Large whiskers are seen on several species, and the neck is sometimes encircled with a ruff. Skull: braincase large; facial region short; orbits large; upper incisors longer than the canines, and all project outward.

The Marmosets are small delicate creatures, possessing a soft, thick, silky fur, and a long rather bushy tail. In color there is much variety among them, and some have ringed tails. In disposition they are very timid, and while attached to, and familiar with those they are accustomed to meet daily, are shy with strangers, and apt to meet advances with sharp bites. The smooth skull, although the braincase is large, indicates a low order of intelligence. The female produces two or three young at a birth contrary to the general rule, as the females of these Anthropoidæ have usually but one.



CALLITHRIX LEUCOPUS.

No. 98.10.3.1. Brit. Mus. Coll. ½ larger than Nat. Size.

LITERATURE OF THE SPECIES.

1758. *Linnæus, Systema Naturæ.*
Callithrix jacchus described as *Simia jacchus.*

1771. *Linnæus, Mantissa Plantarum.*
Callithrix argentata first described as *Simia argentata.*

1777. *Erxleben, Systema Regni Animalis.*
In the genus Callithrix, established by this Author, among other species now placed in different genera, C. jacchus is included.

1792. *Kerr, Animal Kingdom.*
Callithrix jacchus renamed *Simia* (*Sagoinus*) *jacchus moschatus.*

1812. *E. Geoffroy Saint-Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*
Comprising his genus *Jacchus* seven species of Callithrix are given, only five of which are valid, as follows: (*J.*) *vulgaris* = C. jacchus; (*J.*) penicillatus; (*J.*) leucocephalus; (*J.*) auritis; (*J.*) humeralifer first described; (*J.*) *melanurus* = C. argentata; and (J.) argentatus.

(1811), *Humboldt et Bonpland, Recueil d'Observations de Zoologie*
1815. *et d'Anatomie Comparée.*
In the subdivision Jacchus of the *"Famille des Hapales,"* under *Simia* the following species of Callithrix are given: (*S.*) penicillata; (*S.*) aurita; (*S.*) humeralifer; (*S.*) *melanurus* = C. argentata; and (*S.*) *geoffroyi* = C. aurita (E. Geoffroy). Humboldt cites Geoffroy as the Author of the new species notwithstanding the fact Geoffroy's paper was apparently published a year later; but I. Geoffroy gives 1815 as the date of Humboldt's article.

1820. *Desmarest, Mammalogie ou Description des Espèces de Mammifères.*
The genus *Jacchus* is divided into two subgenera *Ouistiti* and *Tamarin.* In the first of these is placed the species given by Erxleben enumerated above, without any additions; while *Tamarin* includes such species as were known to the Author, and which are in this work contained in the genera Seniocebus, Leontocebus and Œdipomidas.

1820. *Kuhl, Beiträge zur Zoologie.*
The list of species enumerated by Geoffroy and Desmarest in

the genus *Jacchus* is repeated here without additions, but all are included in the genus *Hapale*.

1823. *Spix, Simiarum et Vespertilionum Brasiliensium.*
Three species of CALLITHRIX are given in this work under the genus *Jacchus*, viz.: PYGMÆUS; ALBICOLLIS; and PENICILLATUS; the first two described for the first time.

1829. *Fischer, Synopsis Mammalium.*
Under the genus *Jacchus* all the species given by previous authors are included with copious synonymy, as well as the various Tamarins, now considered to belong to other genera.

1830. *Fischer, Addenda, Emendanda et Index ad Synopsis Mammalium.*
The list in the previous work is here given without additions.

1840. *Wagner, Schreber, Die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*
Following the arrangement adopted by Desmarest, all the species enumerated by him belonging to different genera, are in this list included in the genus *Hapale.*

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*
The genus *Hapale* in this work contains the species then known, but which are now placed in the genus CALLITHRIX. It is divided into several subgenera, and the few species recognized have many varieties. 1st subgenus is *Hapale* with two species (*H.*) *leucotis* = C. JACCHUS; and (*H.*) *melanotis* = C. PENICILLATA Humboldt. The first has four varieties, all valid species, viz., A. C. AURITA; B. (*J.*) *vulgaris* = C. JACCHUS; C. C. ALBICOLLIS; C. HUMERALIFER; the second has one "viellesse," C. LEUCOCEPHALA. 2nd subgenus *Mico* has but one species, C. ARGENTATA. 3rd subgenus *Midas* contains species of SENIOCEBUS, and 4th of ŒDIPUS, and 5th of LEONTOCEBUS.

1842. *Wagner, in Wiegmann's Archiv für Naturgeschichte.*
A list of species belonging to the genera CALLITHRIX and CALLICEBUS, in which a description is given for the first time of CALLITHRIX CHRYSOLEUCA. CALLITHRIX is the name the Author adopts for all the species enumerated, four in all.

1851. *I. Geoffroy Saint-Hilaire. Catalogue des Primates.*
The various species of CALLITHRIX described to date are here given under *Hapale*.

1855. *Wagner, Schreber, Die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*

In the genus *Hapale* the various species of CALLITHRIX and the *Tamarins* are here given. *Jacchus* has var. B. ALBICOLLIS; PENICILLATA has var. B. LEUCOCEPHALA; ARGENTATA Linn., is retained as a valid species.

1862. *Reichenbach, Die Vollständigste Naturgeschichte der Affen.*

In this work the following species of CALLITHRIX are given under the genera *Jacchus* and *Mico:* (*J.*) PYGMÆUS; (*J.*) *spixi* = ŒDIPOMIDAS GEOFFROYI; (*J.*) *vulgaris* = C. JACCHUS; (*J.*) HUMERALIFER; (*J.*) ALBICOLLIS; (*J.*) *trigonifer* = C. PENICILLATA; (*J.*) PENICILLATUS; (*J.*) LEUCOCEPHALUS; (*J.*) *maximiliani* = C. LEUCOCEPHALA; (*Mico*) ARGENTATA; and (*M.*) CHRYSOLEUCA.

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in British Museum.*

The species of CALLITHRIX are divided by this Author into several different genera. C. AURITA is placed in *Hapale;* C. JACCHUS as *vulgaris,* in *Jacchus* var. 1, 2; with ALBICOLLIS; PENICILLATA; LEUCOCEPHALA; and *leucogenys* = LEONTOCEBUS DEVILLII as varieties 3, 4, and 5, of *vulgaris.* C. PYGMÆA is placed in *Cebuella;* and *melanura* = ARGENTATA, in *Mico.* All of which genera are unnecessary. In the Appendix to the Catalogue, *C. sericea,* (= CALLITHRIX CHRYSOLEUCA); and C. CHRYSOLEUCA are placed in the genus *Micoella.*

1876. *Schlegel, Muséum d'Histoire Naturelle des Pays-Bas, Simiæ.*

The species of CALLITHRIX are here placed in the genus *Hapale,* as was customary with many of the earlier Authors. *Simia* ARGENTATA Linn., is kept distinct, because its habitat was different from that of *C. melanura* = C. ARGENTATA, and it could not be an albino because its eyes were black and not red!

1876. *Gunther, in Proceedings of the Zoological Society of London.*

CALLITHRIX LEUCOPUS first described as *Hapale leucopus.*

1893. *Matschie, in Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin.*

CALLITHRIX SANTAREMENSIS is described as *Hapale santaremensis.*

1903. *O. Thomas, in Annals and Magazine of Natural History.*

CALLITHRIX FLAVICEPS first described as *Hapale flaviceps.*

1904. *O. Thomas, in Annals and Magazine of Natural History.*

CALLITHRIX GOELDI and *Callithrix penicillata jordani* described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES AND SUBSPECIES.

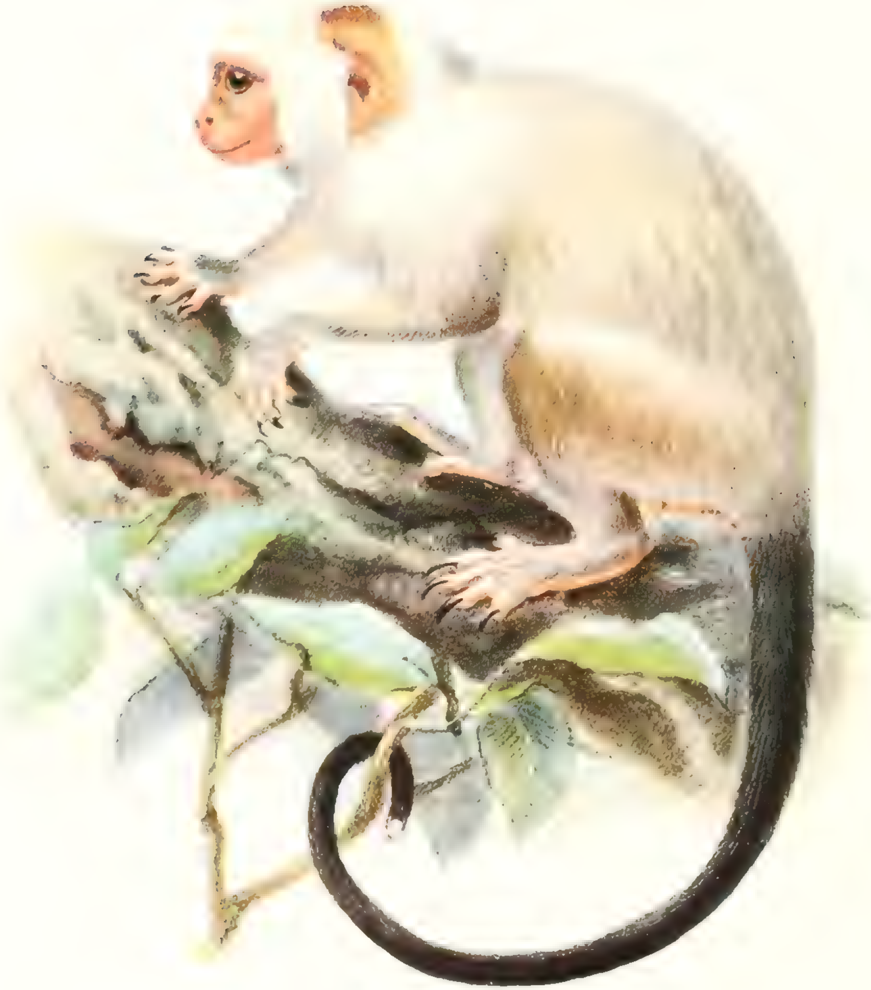
The majority of the species of this genus are natives of Brazil, one only extending its range into Bolivia, and one inhabiting Colombia. C. GOELDI has no ascertained locality, as the unique type was brought alive to the City of Para, and it was not known whether it was captured in the vicinity or taken farther to the westward on the Amazon, or on one of its tributaries. At Santarem, at the mouth of the Rio Tapajos C. SANTAREMENSIS was procured, but its range is quite unknown. C. JACCHUS is stated to have been obtained on the Island of Marajo, lying between the mouths of the Amazon and the Rio Para. In the vicinity of Bahia C. ALBICOLLIS has been obtained, and south of the Bay Todos os Santos, C. HUMERALIFER occurs. C. PENICILLATA ranges from, and including the Province of Goyas, through that of Minas Geræs, and in Espirito Santo on the east coast, between 14 and 17 degrees South Latitude; and *C. p. jordani* is found in the south west portion of Minas Geræs.

In the last named Province C. LEUCOCEPHALA occurs, ranging into the Province of Espirito Santo; and in Matto Grosso C. ARGENTATA is found. This species is also met with in Bolivia, and a specimen according to I. Geoffroy is in the Paris Museum brought from Para by Castelnau and Deville. On the banks of the Upper Parana to the Province of Sao Paulo, C. AURITA occurs, while in the last named Province at Engenhiero Reeve C. FLAVICEPS was procured. At Booba on the Lower Rio Madeira C. CHRYSOLEUCA was obtained; and in the forests along the Rio Solimoens and Rio Ucayali, C. PYGMÆA dwells, and lastly at Medellin in the Province of Antigua, C. LEUCOPUS was found.

KEY TO THE SPECIES AND SUBSPECIES.

A. Tail without rings.
  - *a.* Tail black, feet blackish brown................*C. argentata.*
  - *b.* Tail seal brown, tip white, feet white...........*C. leucopus.*
  - *c.* Tail and feet golden yellow.................*C. chrysoleuca.*
  - *d.* Tail and feet black ....*C. goeldi.*

B. Tail with rings.
  - *a.* Head and neck white.....................*C. santaremensis.*
  - *b.* Center of head tawny ochraceous, rest black.......*C. aurita.*
  - *c.* Middle of head dark brown.
    - *a.*′ Above light gray ....*C. penicillata.*



Callithrix argentata

b.′ Above brownish gray . . . . *C. p. jordani.*

d. Middle and top of head buff.

a.′ Ear tufts black . . . . *C. leucocephala.*

b.′ Ear tufts white . . . . *C. flaviceps.*

e. Head above to nape brownish black. . . . . *C. jacchus.*

f. Head and upper parts of body white. . . . . *C. humeralifer.*

g. Forehead blackish brown; back of head and nape yellowish white . . . . *C. albicollis.*

c.′ No ear tufts. . . . . *C. pygmæa.*

CALLITHRIX ARGENTATA (Linnæus).

Simia argentata Linn., Mant., 1771, p. 521, pl. II; Gmel., Syst. Nat., 1788, p. 41; Audeb., Hist. Nat. Singes et Makis, 1797, Fam. VI, Sec. 2, Fig. 2; Shaw, Genl. Zool., 1800, p. 66, pl. XXVI, lower fig.

Callithrix argentata Erxl., Syst. Reg. Anim., 1777, p. 61.

Jacchus melanurus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 120.

Jacchus argentatus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 120; Desm., Mamm., 1820, p. 94.

Hapale melanura Kuhl, Beitr., 1820, p. 49; Wagn., Schreb., Säugth. Suppl., 1840, p. 244; V, 1855, p. 137; Casteln., Expéd. Amér. Sud, Mamm., 1855, p. 20; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., 1856, pp. 186, 187; Sclat., Proc. Zool. Soc. Lond., 1875, p. 419, pl. I; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 268; Forbes, Handb. Primates, I, 1894, p. 136.

Midas melanurus E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 36, 10me Leçon.

Hapale argentatus Kuhl, Beitr., 1820, p. 49; Wagn., Schreb., Säugth. Suppl., 1840, p. 245; V, 1855, p. 128; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 268.

Jacchus leucomerus Gray, Ann. Mag. Nat. Hist., XVIII, 1846, p. 212.

Midas argentatus E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 36, 10me Leçon; Bates, Nat. Amaz., 1863, p. 128.

Mico argentatus Less., Spec. Mamm., 1840, p. 192; Reichenb., Vollständ. Naturg. Affen, 1862, p. 6, figs. 21, 22.

Mico melanurus Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 64.

BLACK-TAILED MARMOSET.

Type locality. "le Brésil." Geoffroy's type in Paris Museum.

Geogr. Distr. Provinces of Matto Grosso, Para, (I. Geoff.), Brazil; Bolivia, (I. Geoffroy).

Genl. Char. Face naked; ears exposed, naked; tail uniform, black.

Color. Forehead blackish brown; top of head, neck, shoulders and outer side of arms dark wood brown; back mummy brown; legs darker brown; hands grayish brown; feet blackish brown; under parts and inner side of arms yellowish white; inner side of legs orange buff above ankles grading into buff on upper part; broad stripe on outer edge of thighs, extending nearly to center of back white; tail black.

Measurements. Skull: occipito-nasal length, 43; Hensel, 32; zygomatic width, 30; intertemporal width, 22.5; palatal length, 15; width of braincase, 25; median length of nasals, 6; length of upper molar series, 9; length of mandible, 30; length of lower molar series, 10.

The presumable type of *C. melanura* in the Paris Museum is so faded that it would be useless to attempt a description from it, the various shades of brown having practically become one, the legs alone being somewhat darker than the back, grading into the blackish brown of the feet.

CALLITHRIX LEUCOPUS (Gunther).

Hapale leucopus Gunther, Proc. Zool. Soc. Lond., 1876, p. 743; Anders., Cat. Mamm. Ind. Mus. Calc., Pt. I, 1881, p. 89; Forbes, Handb. Primates, I, 1894, p. 134; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 553, Zool. Ser.

WHITE-FOOTED MARMOSET.

Type locality. Medellin, Province of Antioquia, Colombia.

Geogr. Distr. Province of Antioquia, Colombia. Range undetermined.

Genl. Char. Hair on back and sides long, silky; ears large, naked, not tufted; hands and feet white.

Color. Top and sides of head and face covered with short grayish white hairs; nape and upper parts brownish gray, some examples being a yellowish gray; arms from above elbows to wrists white; legs below knees grayish brown; hands and feet whitish; throat dark brown; under parts and inner side of limbs bright cinnamon rufous; tail seal brown, tip whitish.

Measurements. Skull: occipito-nasal length, 47; Hensel, 32; zygomatic width, 33; intertemporal width, 24; median length of nasals, 7; width of braincase, 29; length of upper molar series, 9; length of mandible, 33; length of lower molar series, 7.

There are several specimens of this species in the British Museum, but none of them was selected by its describer as the type, a most unfortunate omission. It was from one of these, No. 75. 6.3.1. that the above description was taken, and this might serve hereafter as THE TYPE.

CALLITHRIX CHRYSOLEUCA (Wagner).

Hapale chrysoleuca Wagn., Wiegm., Archiv., I, 1842, p. 357; *Id.* Schreb., Säugth. Suppl., V, 1855, p. 125; Sclat., Proc. Zool. Soc. Lond., 1869, p. 594; 1871, p. 229; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 63, var. b; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 277; Forbes, Handb. Primates, I, 1894, p. 125.

Mico sericeus Gray, Proc. Zool. Soc. Lond., 1868, p. 256.

Mico chrysoleucus Reichenb., Vollständ. Naturg. Affen, 1862, p. 6, fig. 23.

Hapale argentata Sclat., Proc. Zool. Soc. Lond., 1868, p. 262.

Micoella sericeus Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 131. (Append.).

GOLDEN MARMOSET.

Type locality. Borba, on the Lower Madeira River, Brazil. Type in Vienna Museum.

Geogr. Distr. Known only from the type locality.

Genl. Char. Ears large, naked, margined with long hairs; color pale.

Color. Head and upper part of body, throat, chest and shoulders ivory white; long hairs of ears buffy; arms, back of thighs, legs, tail and lower part of abdomen golden yellow; under parts buffy; ear tufts white. Ex type Vienna Museum.

Measurements. Skull: occipito-nasal length, 42; Hensel, 33; intertemporal width, 23; breadth of braincase, 26; length of upper molar series, 10; palatal length, 10; length of mandible, 31; length of lower molar series, 12.

The type of *M. sericeus* Gray, in the British Museum cannot be separated from C. CHRYSOLEUCA. There was no skull of the species in the Vienna Museum of the four examples in the collection, and the measurements given above were taken from the type of *M. sericeus* Gray.

This is a peculiar little animal, giving, at first, the impression that it must be a partial albino, but all the specimens agree in their coloring, and it is a very pretty species.

CALLITHRIX GOELDI Thomas.

Callithrix goeldi Thos., Ann. Mag. Nat. Hist., XIV, 1904, 7th Ser., p. 100.

GOELDI'S MARMOSET.

Type locality. Para, Brazil. Brought alive to the city. Type in British Museum.

Genl. Char. Hair on back and shoulders long, silky, projecting beyond ears.

Color. Head, limbs and upper parts blackish brown, the hairs at base are broccoli brown graduating into black, and tipped with pale brown; white tufts exist on head in front of ears, and on either side of the back at the loins, and there are white hairs scattered about the forehead; feet, hands, under parts and tail black, with light tips showing on some of the hairs in the tail. Ex type British Museum.

No skull to the specimen.

The specimen is in poor condition and misshapen, so that it would be impossible to give correct measurements. The skin of the hands and feet has been filled with some material and is stretched, making these members appear unusually broad, and the skin of the body has been shortened in making up. There is no species of the genus known to me to which this specimen can be assigned, but as the animal had been in captivity, and possibly, as suggested by Mr. Thomas, had been injured, this accounts for the white hairs on different parts of the head and body. We must wait for additional examples to enable us to decide what shall be its proper place in the genus.

CALLITHRIX SANTAREMENSIS (Matschie).

Hapale santaremensis Matschie, Sitzungsb. Ges. Naturf. Freund. Berlin, 1893, p. 227.

SANTAREM MARMOSET.

Type locality. Santarem, at mouth of River Tapajos, Amazon. Type in Berlin Museum.

Geogr. Distr. South bank of Amazon.

Genl. Char. Similar to C. CHRYSOLEUCA.

Color. White spot over each eye; side of head from corner of mouth to beneath ears, and middle of forehead black; tufts over ears, top of head, neck, shoulders, under side of arms, and back between shoulders white; brownish black streak down back of neck; entire back below shoulders and flanks black, hairs dark gray at base, then pure white, with apical portion black; outer side of leg mixed black and white, with a white stripe across upper thigh; inner side of arms and legs, and under parts of body golden yellow; hands and feet dark brown; tail black, indistinctly barred with buff, becoming more buff than black towards tip. Ex type Berlin Museum.

Measurements. Total length, 570; tail, 380; flat skin. Skull: total length, 45.8; occipito-nasal length, 43; intertemporal width, 22.7; Hensel, 32.1; zygomatic width, 38.9; median length of nasal, 65; palatal length, 13.5; length of upper molar series, 9.7; length of mandible, 28.7; length of lower molar series, 11.

This species resembles somewhat C. CHRYSOLEUCA, and one might almost think, as Herr Matschie says, that that species was an albino of the present one.

CALLITHRIX AURITA *(E. Geoffroy).

Jacchus auritis E. Geoff., Ann. Mus. Hist. Nat., XIX, 1812, p. 119; *Id.* Cours Hist. Nat. Mamm., 1828, p. 36, 10me Leçon; Humb., Rec. Observ. Zool., I, 1811, (1815), p. 360; Desm., Mamm., 1820, p. 3; Fisch., Syn. Mamm., 1829, p. 61; Addend., 1830, p. 61.

Hapale aurita Kuhl, Beitr. Zool., 1820, p. 48; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 243; V, 1855, p. 125; I. Geoff., Cat. Primates, 1851, p. 60; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., Fasc. I, 1856, pp. 185, 187; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 63; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 276; Pelz., Zool.-Bot. Ges. Wien, XXXIII, 1883, Beiheft, p. 21; Forbes, Handb. Primates, I, 1894, p. 134.

Hapale auritus var. A. Less., Spec. Mamm., 1840, p. 188.

WHITE-EARED MARMOSET.

Type locality. "Brazil." Type in Paris Museum.

Geogr. Distr. Province of Sao Paulo, and on the banks of the Upper Parana, Brazil.

Genl. Char. Larger than C. JACCHUS; face whitish; no cross-bands on back, ears tufted with long white hairs.

Color. Face and forehead yellowish white; center of head and nape tawny ochraceous; rest of head, neck, back between shoulders, across loins outer side, and on lower parts, and under parts black; back, flanks, outer side of arms, legs at and below knees tawny and black mixed; hands and feet deep chrome; tail, ringed with alternated black and gray bands, the latter washed with ochraceous towards tip; ear tufts white. Ex type Paris Museum.

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*E. Geoffroy described this and other species of CALLITHRIX in 1812. Humboldt's volume which contains his "Tableau Synoptique des Singes de l'Amérique" bears date of 1811, a year before Geoffroy's paper appeared. As Humboldt cites Geoffroy as the Author of the Species, the date must be an error, which is corrected by I. Geoffroy in his "Catalogue des Primates," 1851, p. vii, in the "Liste des Ouvrages, &c.," where he gives it as 1815, four years after the publication of E. Geoffroy's contribution.

Measurements. Skull: occipito-nasal length, 46; Hensel, 33; zygomatic width, 30; intertemporal width, 33; palatal length, 14; width of braincase, 21; length of upper molar series, 9; length of mandible, 30; length of lower molar series, 10.

CALLITHRIX PENICILLATA *(E. Geoffroy).

Jacchus penicillatus E. Geoffroy, Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 119; Humboldt, Obser. Zool., 1815, p. 360; Spix, Simiar. et Vespert. Bras., 1823, p. 36, pl. XXIV; Desm., Mamm., 1820, p. 92; Fisch., Syn. Reg. Mamm., 1829, p. 61; Addend., 1830, p. 61; Reichenb., Vollständ. Naturg. Affen, 1862, p. 4; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 63, var. 4.

Hapale penicillatus Kuhl, Beitr. Zool., 1820, p. 47.

Hapale penicillata Wagn., Schreb., Säugth. Suppl., I, 1840, p. 242; V, 1855, p. 124; E. Geoff., Cat. Primates, 1851, p. 60; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., 1856, pp. 185, 187; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 273; Anders., Cat. Mamm. Ind. Mus. Calc., 1881, p. 88.

Jacchus trigonifer Reichenb., Vollständ. Naturg. Affen, 1862, p. 4, fig. 10.

Type locality. Brazil. Type not in Paris Museum.

Geogr. Distr. Provinces of Goyas, Minas Geræs, and Espirito Santo, between 14 and 17 degrees S. Latitude; Rio Parana, (Natterer).

Color. Face very scantily covered with white hairs, spot on forehead white; head dark Prout's brown, back of head and mantle brownish black; upper parts, and outer side of limbs gray, banded across lower back and rump with black; under parts black on throat and chest, gray on abdomen; black on inner side of thighs, and yellowish on legs below the knee; tail ringed black and white; hands and feet dark brown and gray mixed.

Measurements. Total length, 495; tail, 285; hind foot, 57; ear, 21. Skull: occipito-nasal length, 41; Hensel, 30; zygomatic width, 29; intertemporal width, 21; palatal length, 13; breadth of braincase, 25;

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*Humboldt cites Geoffroy as the Author of this species.

median length of nasals, 7; length of mandible, 28; length of lower molar series, 9.

The type of this form is no longer in the Paris Museum. There are several specimens, however, in the collection, the earliest of which bears date 1822, ten years after Geoffroy described the species. In all the examples, the name *penicillatus* is attributed to Kuhl, who gave the species in his Beiträge Zoologie eight years after Geoffroy had described it.

CALLITHRIX PENICILLATA JORDANI Thomas.

Callithrix penicillata jordani Thos., Ann. Mag. Nat. Hist., XIV, 7th Ser., 1904, p. 188.

Type locality. Rio Jordao, S. W. Minas Geræs, Brazil. Type in British Museum.

Genl. Char. Like C. PENICILLATA, but width of the middle upper incisor about one half the length, instead of two thirds as in the other species, and it is also longer and narrower.

Color. Face mars brown; spot on forehead and short hairs on lips white; top of head brownish black; nape, neck, and ear tufts black; the hair on back of head very long; general color of upper parts gray, banded with black, this being caused by the subterminal black band on the hairs showing alternately with the gray tips; none of the ochraceous color of the hairs showing, as it so conspicuously does in the other species; arms and legs ochraceous buff washed with gray; throat pale brown; upper part of chest, and a line in center of abdomen ochraceous washed with gray; inner side of arms, elbow to wrist black; above elbow ochraceous buff and gray; inner side of legs pale clay color, with a black spot near the body; hands and feet mixed black and orange; tail ringed with black and white. Ex type British Museum.

Measurements. Total length, 533; tail, 298; foot, 58; ear, 20. Skull: occipito-nasal length, 42; Hensel, 30; intertemporal width, 21; palatal length, 13; zygomatic width, 28; breadth of braincase, 25; median length of nasals, 8; length of upper molar series, 9; length of mandible, 27.5; length of lower molar series, 9. Ex type in British Museum.

This subspecies is not so gray as C. PENICILLATA, but darker and browner; the band above the slate colored base of the hairs is tawny and not ochraceous, and this causes the general darker hue of the animal; the under parts are much lighter, and more yellowish brown on sides of abdomen and inner side of thighs.

CALLITHRIX JACCHUS (Linnæus).

Simia jacchus Linn., Syst. Nat., I, 1758, p. 27; I, 1766, p. 40; Erxl., Syst. Reg. Anim., 1777, p. 56; Bodd., Elench. Anim., 1784, p. 68; Gmel., Syst. Nat., I, 1788, p. 39.

Callithrix jacchus Erxl., Syst. Reg. Anim., 1777, p. 56; Fisch., Syn. Mamm., 1829, p. 60; Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 553, Zool. Ser.; Thos., Proc. Zool. Soc. Lond., 1911, p. 127.

Simia (*Sagoinus*) *jacchus moschatus* Kerr, Anim. Kingd., 1792, p. 80, No. 80.

Simia (*Jacchus*) *jacchus* Humb., Rec. Obs. Zool., I, (1811), 1815, p. 360.

Jacchus vulgaris E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 119; *Id.* Cours Hist. Nat. Mamm., 1828, p. 35, 10me Leçon; Reichenb., Vollständ. Naturg. Affen, 1862, p. 2; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 63, var. 12.

Hapale jacchus Kuhl, Beitr. Zool., 1820, p. 46; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 241; V, 1855, p. 124; Blainv., Ostéog., 1841, Atl., Cebus, pl. VI; I. Geoff., Cat. Primates, 1851, p. 39; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 185, 187; Bates, Nat. Amaz., 1863, I, p. 98; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 271; Forbes, Handb. Primates, I, 1894, p. 132.

COMMON MARMOSET.

Type locality. "in America."

Geogr. Distr. Island of Marajo, Brazil.

Genl. Char. Face black with white spot; ears naked with a tuft of long hairs; hairs outside of head long; cross bands on back; tail banded.

Color. Head, nape, neck, and throat brownish black; ear tufts and long hairs from behind ears white; back yellowish gray; lower back barred with ochraceous, black and grayish white, caused by the ochraceous hairs, the subterminal black bars and grayish white tips alternating; hind limbs, hands and feet, black washed with yellowish white; under parts and inner side of limbs, black washed with gray; tail banded black and white.

Measurements. Total length, 510; tail, 295; foot, 61; ear, 21, (Collector). Skull: occipito-nasal length, 42; Hensel, 32; zygomatic width, 30; intertemporal width, 22.5; palatal length, 14; breadth of braincase, 25; median length of nasals, 8; length of upper molar series, 9; length of mandible, 29; length of lower molar series, 10.

Bates, (l. c.) states that while walking about the streets of Para he counted thirteen different species of monkeys, and, of these, two he never met again in any part of the country. One of these was *Hapale* JACCHUS. "It was seated on the shoulder of a young mulatto girl, as she was walking along the street, and I was told had been captured in the island of Marajo." This appears to be about the only identified locality in which this species is found, for previous authors, as a rule, in giving the range of C. JACCHUS have so confounded several species together, as to make it practically impossible to designate the geographical limits of this long and well known species; and of its range in Brazil but little is known even at this late day.

CALLITHRIX FLAVICEPS (Thomas).

Hapale flaviceps Thos., Ann. Mag. Nat. Hist., XII, 7th Ser., 1903, p. 240.

YELLOW-HEADED MARMOSET.

Type locality. Engenheiro Reeve, Province of Espirito Santo, Brazil. Type in British Museum.

Color. Face and forehead whitish; head, throat, neck, shoulders, upper part of chest and inner side of arms, buff or buff yellow, upper parts showing the tawny, black, and gray color which each hair exhibits, the tawny not visible on lower back and rump, where the other two colors are ranged in black and grayish white bands across the body; outer side of arms yellowish; outer side of legs dark gray; middle of chest and abdomen, and spot between legs black, rest of abdomen tawny; hands and feet mixed dark brown and yellowish; tail ringed with black and gray, and a black spot on each side of base. Ex type British Museum.

Measurements. Total length, 546; tail, 298; foot, 65; ear, 23. Skull: occipito-nasal length, 47; Hensel, 33; zygomatic width, 31; intertemporal width, 23; palatal length, 15.5; width of braincase, 28.5; median length of nasals, 8; length of upper molar series, 10; length of mandible, 31; length of lower molar series, 13.

CALLITHRIX LEUCOCEPHALA (E. Geoffroy).

Jacchus leucocephalus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 119; Desm., Mamm., 1820, p. 93; Fisch., Syn. Mamm., 1829, p. 61; Addend., 1830, p. 61; Reichenb., Vollständ. Naturg. Affen, 1862, p. 4, fig. 16; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 63, var. 5.

Jacchus vulgaris Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 63, var. 4 and 5.

Hapale leucocephalus Kuhl, Beitr. Zool., 1820, p. 47.

Hapale leucocephala Wagn., Schreb., Säugth. Suppl., I, 1840. p. 124, var. B; I. Geoff., Cat. Primates, 1851, p. 60; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 185, 187; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 274.

Jacchus maximiliani Reichenb., Vollständ. Naturg. Affen, 1862. p. 5, fig. 17.

WHITE-FRONTED MARMOSET.

Type locality. "le Brésil." Type in Paris Museum.

Geogr. Distr. Eastern coast of Brazil in the Provinces of Minas Geræs and Espirito Santo.

Genl. Char. Face flesh color; hands and feet brown; tail ringed.

Color. Head in front of ears white; back of head and neck black; ears black, with long black tufts; upper parts have the hairs ochraceous with a subterminal black bar and yellowish white tips, giving a mottled appearance of all three colors; arms and legs grayish brown; throat and chest white; under parts, hands and feet, blackish brown; tail ringed with gray and black bands. Ex type Paris Museum.

Measurements. Total length about 400; tail, 200. Skull in mounted type specimen.

CALLITHRIX HUMERALIFER *(E. Geoffroy).

Jacchus humeralifer Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 120; Humb., Rec. Obser. Zool., 1811, (1815), p. 360; Desm., Mamm., 1820, p. 93; Fisch., Syn. Mamm., 1829, p. 62; Addend., 1830, p. 62; Reichenb., Vollständ. Affen, 1862, p. 4; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 63.

Hapale humeralifer Kuhl, Beitr. Zool., 1820, p. 48; I. Geoff., Cat. Primates, 1851, p. 60; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 185, 187; Bates, Nat. Amaz., II, 1863, p. 55; Forbes, Handb. Primates, I, 1894, p. 133.

Hapale humeralifer var. D. Less., Spec. Mamm., 1840, p. 189.

WHITE-SHOULDERED MARMOSET.

Type locality. "le Brésil." Type in Paris Museum.

Geogr. Distr. Vicinity of Bahia, to the Bay of Todos os Santos, Brazil. (Wied).

Genl. Char. Face partly naked; ears fringed with long hairs.

Color. Forehead, face, sides of head and throat bare; center and side of head near ears, black; rest of head, tufts on ears, neck, upper part of back, shoulders, arms, hands and under parts, soiled white; rest of upper parts blackish brown, the hairs being white with blackish brown tips, and the white shows in spots giving the back and rump a mottled appearance; hind limbs and feet blackish brown; tail, black and gray mixed, the hairs being gray ringed with black. Ex type Paris Museum.

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*Humboldt cites Geoffroy as the Author of this species.

Measurements. Size about as C. JACCHUS. Skull in mounted type specimen.

It is most likely the fact that the bare head and throat of the type is caused by the hairs having slipped, as scattered ones still are to be seen, rather than that these naked parts are natural. The scattered colored places on the head, and the whiteness of the hairs on the upper part of the body, and the white mottling of the back and rump would seem to be more a condition of partial albinism of C. JACCHUS than characters indicating a distinct species. However, it is impossible to establish this as a fact, and until more proofs are obtained in other specimens, duplicating the type, or examples of C. JACCHUS in various albinistic stages, the present specimen will have to remain under the name given to it by Geoffroy.

Bates (l. c.) gives the following account of this species as observed by him at Santarem: "I saw in the woods on one occasion, a small flock of monkeys, and once had an opportunity of watching the movements of a sloth. The monkeys belonged to a very pretty and rare species, a kind of Marmoset, I think the *Hapale* HUMERALIFER described by Geoffroy St. Hilaire. I did not succeed in obtaining a specimen, but saw a living example afterwards in the possession of a shop keeper at Santarem. It seems to occur nowhere else except in the dry woods bordering the campos in the interior parts of Brazil. Altogether I thought it the prettiest species of its family I had yet seen. One would mistake it at first sight for a kitten, from its small size, varied colors and the softness of its fur. It was a most timid creature, screaming and biting when any one attempted to handle it; it became familiar, however, with the people of the house a few days after it came into their possession. When hungry or uneasy it uttered a weak querulous cry, a shrill note, which was sometimes prolonged so as to resemble the stridulation of a grasshopper."

CALLITHRIX ALBICOLLIS (Spix).

Jacchus albicollis Spix, Sim. et Vespert. Bras., 1823, p. 33, pl. XXV; Fisch., Syn. Mamm., 1829, p. 60; Addend., 1830, p. 60; Reichenb., Vollständ. Naturg. Affen, 1862, p. 4.

Hapale albicollis I. Geoff., Cat. Primates, 1851, p. 59; Dahlb., Stud. Zool. Fam. Reg. Natur., fasc. I, 1859, pp. 185, 187; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 63, var. 3.

Hapale albicollis var. C. Less., Spec. Mamm., 1840, p. 189.

Type locality. Woods in vicinity of Bahia, Brazil. Type in Munich Museum.

Geogr. Distr. Vicinity of Bahia, Brazil.

Genl. Char. Ears tufted; hairs on neck long forming a mantle; size small.

Color. Top of head reddish brown; long ear tufts grayish white; sides and back of head and neck yellowish white; upper parts mottled with black and ochraceous, hairs tipped with white; outer side of limbs brownish black, hairs gray tipped; throat and fore part of breast grayish white; under parts, hands and feet blackish brown; tail brownish black, indistinctly ringed with gray. Ex type Munich Museum. The throat and fore part of chest appear yellowish, but this is merely the reflection of the skin, the hairs being grayish white. The skull is in the specimen.

Color. Ex specimen British Museum. Upper lip and spot on forehead white; head in front of ears, Prout's brown; center of head, and nape yellowish white, sometimes grayish white; ear tufts white; back very similar to that of C. LEUCOCEPHALA, the hairs ochraceous with a subterminal black bar and white tips; arms blackish brown, hairs tipped with yellowish; legs yellowish brown; under parts pale brown on throat and a band across chest and inner side of legs, rest blackish brown; tail ringed black and gray, or black and yellowish; hands and feet dark brown washed with gray.

Measurements. Total length, 494; tail, 296; foot, 59; ear, 24, (Collector). Skull: occipito-nasal length, 41; Hensel, 30; intertemporal width, 24; width of braincase, 24; zygomatic width, 30; palatal length, 13.5; median length of nasals, 6; length of upper molar series, 8; length of mandible, 28; length of lower molar series, 10.

The difference between this form and C. LEUCOCEPHALA is mainly in the coloring of the nape and ear tufts, which are yellowish white in C. ALBICOLLIS and black in its relative; the rest of the pelage is colored almost exactly the same.

CALLITHRIX PYGMÆA (Spix).

Jacchus pygmæus Spix, Simiæ et Vespert. Bras., 1823, p. 32, pl. XXIV, fig. 2; Reichenb., Vollständ. Naturg. Affen, 1862, p. 1.

Hapale pygmæa I. Geoff., Cat. Primates, 1851, p. 61; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 126; Casteln., Expéd. Amér. Sud, Mamm., I, 1855, p. 20, pl. V, figs. 1, 2; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 186, 187; Bartl., Proc. Zool. Soc. Lond., 1871, p. 220; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 277; Anders., Cat. Mamm. Ind. Mus. Calc., Pt. I, 1881, p. 88; Forbes, Handb. Primates, I, 1894, p. 135.

Cebuella pygmæa Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 64.

PIGMY MARMOSET.

Type locality. Forest near Tabatinga on the Rio Solimoens, Brazil. Type in Munich Museum.

Geogr. Distr. Forest along the Solimoens and Ucayali rivers, Brazil, north into Mexico. (Bates).

Genl. Char. Size diminutive; ears small.

Color. Top of head dark brown, hairs pale yellow tipped with dark brown; hairs on back black at base, then yellowish white, then black, giving this part a mottled appearance; limbs blackish brown and yellow; under parts yellowish. Ex type Munich Museum.

The type is in bad condition, and a correct description of its pelage as it was when the animal was living is impossible, as the fur is discolored and the hair is mostly gone from the tail. The skull is in the skin, and judging from the teeth, which are exposed, the animal is fully adult, although so small in size.

Color. Adult. Head, neck and back between shoulders speckled dark brown and gray, or dark brown and clay color; back black mottled with buff; gray on rump; outer side of arms like head; outer side of legs like back; throat and upper part of breast yellowish brown; abdomen gray, inner side of legs yellowish brown; hands and feet yellowish; tail above banded with black and tawny, beneath tawny for basal two thirds, banded with black and tawny for remainder.

Measurements. Total length, (skin), 325; tail, 165; foot to end of nails, 46. Skull: occipito-nasal length, 34; intertemporal width, 19; palatal length, 12; zygomatic width, 23.5; breadth of braincase, 22; median length of nasals, 5; length of upper molar series, 6.5; length of mandible, 20; length of lower molar series, 7.

GENUS CALLICEBUS. TITI MONKEYS.

$$\text{I. }\frac{2-2}{2-2};\quad \text{C. }\frac{1-1}{1-1};\quad \text{P. }\frac{3-3}{3-3};\quad \text{M. }\frac{2-2}{2-2}=32.$$

CALLICEBUS Thomas, Ann. Mag. Nat. Hist., 7th Ser., XII, 1903, pp. 456, 457. Type *Callithrix personatus* E. Geoffroy.

Saguinus Less., Man. Mamm., 1827, p. 56, (nec Sagouin Lacép., 1799; nec Illig., 1811).

Callithrix Auct., (nec Erxleben).

Head small, depressed; eyes small; ears large; tail long, bushy. Skull lacks backward extension, such as exists among the species of SAIMIRI; canines small; angle of mandible only moderately expanded.

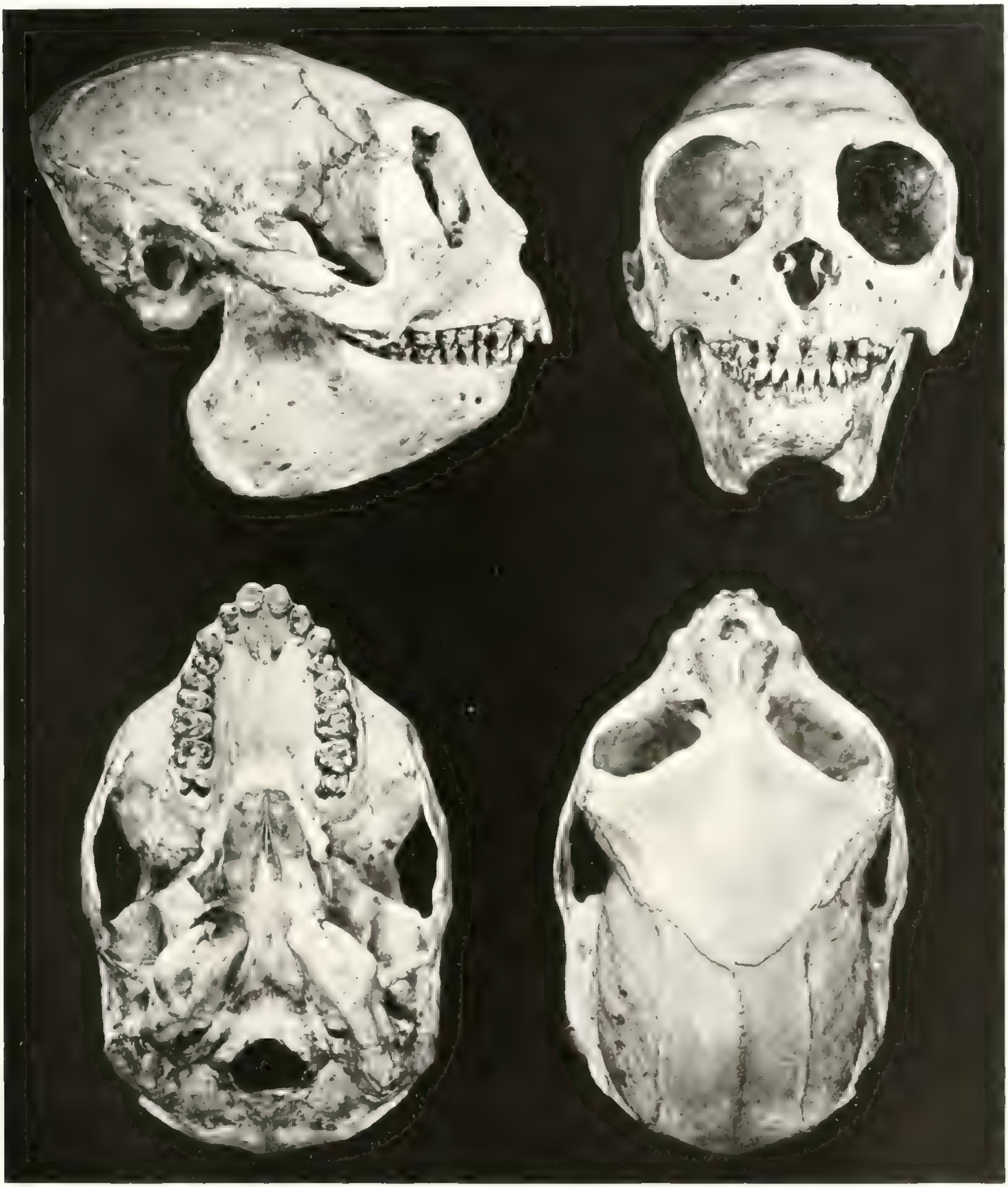
The Titi Monkeys, as the members of this genus are usually called, are active creatures, but less lively than the Sapajou or Capuchins, and Bates says that C. MOLOCH is a dull, listless animal. But according to his own account, it is agile enough in the trees. Their food consists of fruits, insects, birds' eggs, and small birds whenever they succeed in capturing one. Their range is extensive, comprising the greater part of Brazil, and they are also natives of Colombia, Ecuador, Peru, and Bolivia.

LITERATURE OF THE SPECIES.

1807. *Hoffmannsegg, in Magasin für die neuesten Entdeckungen in der gesammten Naturkunde. Berlin.*
CALLICEBUS TORQUATUS and C. MOLOCH, are here first described as *Cebus torquata* and *Cebus moloch.*

1811. *Humboldt et Bonpland, Recueil d'Observations de Zoologie et*
(1815). *d'Anatomie Comparée.*
CALLICEBUS AMICTUS described as *Simia* AMICTA; (*S.*) TORQUATUS; (*S.*) *lugens* = CALLICEBUS TORQUATUS. The other species are (*S.*) PERSONATUS; and (*S.*) MOLOCH. (*S.*) SCIUREUS is a SAIMIRI.

1812. *E. Geoffroy Saint-Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*
Under the genus CALLITHRIX six species are given as follows: (*C.*) *sciureus* = SAIMIRI SCIUREUS; (*C.*) PERSONATUS de-



CALLICEBUS PERSONATUS.

No. 3.9.4.22. Brit. Mus. Coll. Nat. Size.

scribed for the first time; (*C.*) *lugens* = CALLICEBUS TORQUATUS; (*C.*) AMICTUS; (*C.*) TORQUATUS; and (*C.*) MOLOCH.

1820. *Kuhl, Beiträge zur Zoologie.*

Eight species are here recorded under the genus CALLITHRIX, varying but little from Geoffroy's list. (*C.*) SCIUREUS = SAIMIRI SCIUREUS; (*C.*) INFULATUS (Licht.), is an AOTUS; (*C.*) TORQUATUS; (*C.*) AMICTUS; (*C.*) *lugens* = CALLICEBUS TORQUATUS; (*C.*) MOLOCH; (*C.*) PERSONATUS; and (*C.*) MELANOCHIR first described.

1820. *Desmarest, Mammalogie ou Description des espèces de Mammifères.*

A repetition of Kuhl's list is here given with the same errors repeated.

1823. *Spix, Simiarum et Vespertilionum Brasiliensium.*

Like most of the previous authors, CALLITHRIX, in place of CALLICEBUS, is here used for the genus of these monkeys, and six species are recorded. (*C.*) PERSONATUS; (*C.*) AMICTUS; (*C.*) CINERASCENS; (*C.*) NIGRIFRONS; (*C.*) GIGOT; and (*C.*) CUPREUS all four described for the first time.

1826. *Maximilian, Prinzen zu Wied, Beiträge zur Naturgeschichte von Brasilien.*

Two species of CALLICEBUS are given in this work as (*Callithrix*) PERSONATUS; and (*C.*) MELANOCHIR.

1829. *Fischer, Synopsis Mammalium.*

In this book the species of CALLICEBUS are placed in the genus CEBUS, and six species are given and two varieties. (*C.*) PERSONATUS, with (*C.*) NIGRIFRONS as a synonym considered as the young apud Temminck. (*C.*) TORQUATUS, with var. β. (*C.*) AMICTUS; and var. γ. (*C.*) *lugens* = CALLICEBUS TORQUATUS; (*C.*) MOLOCH; (*C.*) MELANOCHIR; (*C.*) INFULATUS = AOTUS INFULATUS; and (*C.*) CUPREUS.

1830. *Fischer, Addenda, Emendanda et Index ad Synopsis Mammalium.*

The list of species given in the preceding work under the genus CEBUS is here repeated.

1835-
1847. *D'Orbigny et Gervais, in Voyage dans l'Amérique Méridionale. Mammifères.*

CALLICEBUS DONACOPHILUS first described as *Callithrix donacophilus.*

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*

The species of CALLICEBUS are here placed in his genus SAGUINUS, and, as in the other genera treated by the Author, are divided into many varieties. They are (*S.*) MOLOCH; (*S.*) CUPREUS; (*S.*) PERSONATUS; (*S.*) NIGRIFRONS; var. A. (*S.*) INFULATUS is an AOTUS; var. B. (*S.*) DONACOPHILUS; and var. C. (*S.*) MELANOCHIR; with (*S.*) CINERASCENS Spix as juv.; (*S.*) *vidua* = C. TORQUATUS; (*S.*) AMICTUS; and (*S.*) TORQUATUS as (*S.*) AMICTUS juv.

1840. *Wagner, Schreber, die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*
Six species and two varieties of CALLICEBUS are here given under CALLITHRIX, viz., (*C.*) PERSONATUS; (*C.*) MELANOCHIR; (*C.*) DONACOPHILUS; (*C.*) MOLOCH; (*C.*) CUPREUS; and (*C.*) TORQUATUS, with var. *β*. (*C.*) AMICTUS; and *γ*. (*C.*) ***lugens*** = CALLICEBUS TORQUATUS.

1842. *Wagner, in Archiv für Naturgeschichte.*
Two species of CALLICEBUS are here first described in the genus CALLITHRIX; (*C.*) CALIGATUS; and (*C.*) BRUNNEUS.

1848. *I. Geoffroy Saint-Hilaire, in Comptes Rendus.*
CALLICEBUS CUPREUS (Spix), is redescribed as *Callithrix discolor.*

1851. *I. Geoffroy Saint-Hilaire, Catalogue des Primates.*
Seven species of CALLICEBUS are here recorded under the genus CALLITHRIX, viz., (*C.*) PERSONATUS; (*C.*) AMICTUS; (*C.*) GIGOT; (*C.*) MELANOCHIR; (*C.*) DONACOPHILUS; (*C.*) *discolor* = CALLICEBUS CUPREUS, and (*C.*) MOLOCH.

1855. *Wagner, Schreber, Die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*
The list given in the previous volume is here repeated with (*C.*) CALIGATUS, and (*C.*) BRUNNEUS added.

1862. *Reichenbach, Die Vollständigiste Naturgeschichte der Affen.*
The species of CALLICEBUS are here included in CALLITHRIX and are as follows: (*C.*) PERSONATUS; (*C.*) NIGRIFRONS; (*C.*) MELANOCHIR; (*C.*) AMICTUS; (*C.*) TORQUATUS; (*C.*) ***lugens*** = CALLICEBUS TORQUATUS; (*C.*) INFULATA = AOTUS INFULATUS; (*C.*) CUPREUS; (*C.*) MOLOCH; (*C.*) DONACOPHILUS; (*C.*) *discolor* = CALLICEBUS CUPREUS; (*C.*) CINERASCENS; (*C.*) GIGOT; (*C.*) CALIGATUS; (*C.*) BRUNNEUS, and (*C.*) *chlorocnemis* Lund, a Pleistocene fossil.

1865. *St. George Mivart, in Proceedings of the Zoological Society of London.*

An elaborate paper on the axial skeleton of the Primates, with critical comparisons between the Families and Genera and their resemblance to Man.

1866. *J. E. Gray, in Annals and Magazine of Natural History.*
Callicebus ornatus first described as *Callithrix ornatus;* and C. caligatus redescribed as *Callithrix castaneo-ventris.*

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in British Museum.*
Under the genus Callithrix, eleven species of Callicebuus are here given. (*C.*) cupreus; (*C.*) amictus; (*C.*) torquatus; (*C.*) donacophilus (nec D'Orb.), = Callicebus pallescens Thos.; (*C.*) moloch; (*C.*) ornatus; (*C.*) personatus; (*C.*) nigrifrons; (*C.*) *castaneo-ventris* = Callicebus caligatus; (*C.*) melanochir, and (*C.*) gigot.

1883. *A. von Pelzeln, Brasilische Säugethiere.*
Six species of Callicebus are here enumerated under Callithrix, viz., (*C.*) nigrifrons; (*C.*) moloch; (*C.*) caligata; (*C.*) brunnea; (*C.*) gigot, and (*C.*) torquata.

1900. *Cabrera, in Anales Sociedad Española de Historia Natural.*
Callicebus leucometopa first described as *Callicebus cupreus leucometopa.*

1907. *D. G. Elliot, in Annals and Magazine of Natural History.*
Callicebus ustofuscus, and C. subrufus first described.

1907. *O. Thomas, in Annals and Magazine of Natural History.*
Callicebus pallescens first described.

1908. *O. Thomas, in Annals and Magazine of Natural History.*
Callicebus *hoffmannsi* first described.

1911. *O. Thomas, in Annals and Magazine of Natural History.*
Callicebus emiliæ first described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

Brazil is evidently the home of the members of this genus and they have a wide distribution over its territory, with representatives on the west in Colombia, Ecuador, Peru and Bolivia. In the north on the right bank of the Orinoco near the Mission of Santa Barbara, C. torquatus is found and its range is extended in the forests watered by the Rios Cassiquiare, Guaviare, Negro and Solimoens, going, according to Tschudi, (l. c.) in southeastern Peru as far as Latitude 12°. On the Upper Amazon in the forests of Olivença near the Rio Solimoens and thence to Peru (Tschudi), its near relative C. amictus occurs. At

Urucurituba, Santarem, on the Lower Amazon, C. HOFFMANNSI was procured, and from near the last mentioned town, C. REMULUS was obtained, and from Para C. EMILIÆ was received. On the east coast from the Rio St. Mattheus to Sertem de Bahia C. MELANOCHIR is met with; and on the banks of the Rio Para near the mouth of the Rio Tapajos, and also according to Schlegel (l. c.) at Aveyros on the Lower Amazon, C. MOLOCH dwells. Near Ilhéos south of Bahia C. GIGOT has been procured, and this species goes as far to the south as New Freibourg (Schlegel), between the Rio Parahyba and the mountains to the north of the Bay of Rio de Janeiro. Near the last named city extending northward to the banks of the Rio St. Mattheus (Wied), and on the Rio Doce C. PERSONATUS ranges, and according to Tschudi, (l. c.) it is also found in Peru between 12° and 14° South Latitude. In the Provinces of Minas Geræs and Rio de Janeiro C. NIGRIFRONS ranges. The most southern locality for any member of the genus is Chaco in Paraguay, where C. PALLESCENS has been taken. On the middle Amazon near Teffé or Ega, C. EGERIA occurs; while at the Falls of Bonaneira, Rio Marmoré, C. BRUNNEUS was procured; and near Borba on the Rio Madeira, C. CALIGATUS was obtained. On the Rio Solimoens and thence into Peru in the forests of the Rio Ucayali and Rio Huallaga, also on the Rio Copataza, and at Andoas in Ecuador, C. CUPREUS occurs, and on the banks of the Rio Potomaico, on the borders of Peru, C. CINERASCENS was procured. From some unknown locality, supposedly in Brazil, C. USTOFUSCUS came. In Colombia near Bogota C. ORNATUS was met with. At Andoas, on the Rio Pastasa in Ecuador, C. PÆNULATUS occurs, and also in the same State its locality unknown, C. LEUCOMETOPA was obtained. Finally in Peru, at Pachite on the Rio Ucayali, C. SUBRUFUS occurs, and in the Province of Sara, Central Bolivia, C. DONACOPHILUS is found. As may be seen from the above recapitulation, the entire range of a number of species is not yet known, and doubtless, in numerous instances, they are considerably greater than those given.

KEY TO THE SPECIES.

A. Tail black.
  a. Under parts red .... *C. torquatus.*
  b. Under parts black .... *C. amictus.*
B. Tail grayish and black.
  a. Hairs on ears dark claret brown............ *C. ustofuscus.*
  b. Hairs on ears reddish.

    - *a.*′ Forehead buffy yellow grading to ferruginous .... *C. cupreus.*
    - *b.*′ Forehead blackish maroon .... *C. caligatus.*
    - *c.*′ Forehead mixed black and gray......... *C. melanochir.*
    - *d.*′ Forehead grizzled ochraceous .... *C. pænulatus.*
  - *c.* Hairs on ears white.
    - *a.*′ Hands and feet burnt sienna, fingers grayish rufous .... *C. egeria.*
    - *b.*′ Hands and feet chestnut .... *C. leucometopa.*
    - *c.*′ Hands and feet bright chestnut red, fingers and toes white .... *C. subrufus.*
    - *d.*′ Hands and feet black, hairs tipped with white .... *C. hoffmannsi.*
    - *e.*′ Hands and feet yellowish gray.
      - *a.*″ Under parts coppery red.............. *C. ornatus.*
      - *b.*″ Under parts rufous .... *C. remulus.*
      - *c.*″ Under parts dark cinnamon rufous. *C. donacophilus.*
  - *d.* Hairs on ears ashy gray; under parts bright orange .... *C. emiliæ.*
  - *e.* Hairs on ears yellowish gray.
    - *a.*′ Cheeks yellow, chest and belly pale rufous.. *C. pallescens.*
    - *b.*′ Cheeks, chest and belly reddish .... *C. moloch.*
    - *c.*′ Cheeks, chest and belly grayish white... *C. cinerascens.*
- C. Tail tawny, or cinnamon rufous.
  - *a.* Hairs on ears black.
    - *a.*′ Top of head grayish brown .... *C. nigrifrons.*
    - *b.*′ Top of head pale gray .... *C. gigot.*
    - *c.*′ Top of head black .... *C. personatus.*
    - *d.*′ Top of head yellowish brown .... *C. brunneus.*

CALLICEBUS TORQUATUS (Hoffmannsegg).

Cebus torquatus Hoffm., Mag. Ges. Nat. Freund. Berlin, X, 1807, p. 86.

Simia (*Callithrix*) *lugens* Humb., Rec. Zool. Observ., I, 1811, (1815), p. 357; Kuhl, Beitr. Zool., 1820, p. 39; Desm., Mamm., 1820, p. 87; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 18, 10me Leçon.

Simia (*Callithrix*) *torquatus* Humb., Rec. Obs. Zool., I, 1811, (1815), p. 357.

Callithrix torquatus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 114; Kuhl, Beitr. Zool., 1820, p. 39; E. Geoff., Cours

Hist. Nat. Mamm., 1828, p. 19; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 234; V, 1855, p. 119; Tschudi, Faun. Peruan., 1846, p. 47; Wallace, Proc. Zool. Soc. Lond., 1852, pp. 107-109; Reichenb., Vollständ. Naturg. Affen, 1862, p. 22, no fig.; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 55; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 235; von Pelz., Bras. Säugth., 1833, p. 20; Forbes, Handb. Primates, I, 1894, p. 159.

Callithrix lugens E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 113; Kuhl, Beitr. Zool., 1820, p. 89; Desm., Mamm., 1820, p. 87; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 18, 10me Leçon; Reichenb., Vollständ. Naturg. Affen, 862, p. 22, no fig.

Sanguinus vidua Less., Spec. Mamm., 1840, p. 166; *Id.* Nouv. Tab. Reg. Anim., 1842, p. 8.

WHITE-COLLARED TITI MONKEY.

Type locality. Right bank of the River Tocantins near its mouth.

Geogr. Distr. River Tocantins; mountains on right bank of the Orinoco, near Mission of Santa Barbara; the forests near the Rio Cassiquiare and the Rio Guaviare near St. Fernando de Atabapo; upper reaches of the Rio Negro; forest of Olivença on the right bank of the Rio Solimoens; Southern Peru, (Tschudi).

Genl. Char. Fur long, soft, woolly; ears short, nearly naked.

Color. Face naked, or with a few short white hairs on lips and cheeks; forehead, sides of head in front of ears, limbs, feet and tail black; upper parts dark maroon; under parts paler with the throat white, this hue extending as a kind of collar up to the ears; hands yellowish white.

Measurements. Total length, 800; tail, 475. Skull: intertemporal width, 35; breadth of braincase, 39; palatal length, 18; median length of nasals, 15; length of upper molar series, 16; length of mandible, 43; length of lower molar series, 18.

CALLICEBUS AMICTUS *(E. Geoffroy).

Callithrix amictus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 114; *Id.* Cours Hist. Nat. Mamm., 1828, p. 18, 10me Leçon; Kuhl, Beitr. Zool., 1820, p. 39; Desm., Mamm., 1820, p. 8; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 234; V,

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*"Espèce inédite," E. Geoffroy. This Author and Humboldt must have seen each other's MSS. as each cites the other's article on the Monkeys, although these were published some years apart.

1855, p. 119; I. Geoff., Cat. Primates, 1851, p. 40; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 152-154; Reichenb., Vollständ. Naturg. Affen, 1862, p. 22, fig. 58; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 54; Forbes, Proc. Zool. Soc. Lond., 1880, p. 634.

Simia (*Callithrix*) *amicta* Humb., Rec. Obs. Zool., I, 1811, (1815), p. 357.

Callithrix amicta Spix, Simiar. et Vespert. Bras., 1823, p. 13, pl. XIII; Less., Spec. Mamm., 1840, p. 167; Forbes, Handb. Primates, I, 1894, p. 161.

Callithrix torquatus Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 235. (Part.).

WHITE-CRESTED TITI MONKEY.

Type locality. Forest of Olivença near Solimoens River, Brazil.

Geogr. Distr. Upper Amazon region, Brazil.

Genl. Char. Similar to C. TORQUATUS, but differs in having under parts black instead of red.

Color. Face bare; white hairs on cheeks and on under lip; head, whiskers and throat, arms, legs, feet, tail and under parts of body black; upper part of chest extending upward to ears in a half collar, and hands white.

Measurements. Total length, 863; tail, 482; foot, 76.2. Ex specimen in Paris Museum procured from Frank of Amsterdam in 1849. It is marked "type" on the label, but of course it is not E. Geoffroy's type. No skull.

This species has frequently been considered the same as C. TORQUATUS, but the black under parts of the body will always cause it to be easily distinguished from its relative. It appears to be rare in collections.

CALLICEBUS USTOFUSCUS Elliot.

Callicebus ustofuscus Elliot, Ann. Mag. Nat. Hist., XX, 1907, 7th Ser., p. 185.

Type locality. Brazil. Type in British Museum.

Genl. Char. Allied to C. CUPREUS, but color much darker. Skull has the teeth much larger; palate longer and narrower; braincase wider; space between pterygoid processes and bullæ, and the width of basioccipital throughout its length, greater. Practically the skull is larger and more massive in every way. Mandible much larger and heavier, and the depth of the ramus very much greater.

Color. The general appearance of this animal shows a burnt umber color, the hairs having a slaty base and then annulated with two slate and two clay color bands, and a dark tip. Face naked, black; top of head mixed dark ochraceous rufous and black, the black predominating on the forehead; the rump is redder than the back being somewhat of a burnt sienna color; outer side of limbs, hands and feet, very dark claret brown; sides of head, throat, inner side of limbs and under parts maroon; tail for one third the basal length black, the hairs being chestnut with broad black tips; rest of tail mixed black and yellowish gray or very pale clay color, the under parts of the tail being almost altogether of this color; ears black. Ex type British Museum.

Measurements. Size about the same as C. CUPREUS. Skull: occipital region has been cut off. Intertemporal width, 32; zygomatic width, 41; palatal length, 21; width between last molars, 12; breadth of braincase, 35; median length of nasals, 9; length of upper molar series, 14; length of first upper molar, 5; length of mandible, 42; extreme height of mandible, 35; length of lower molar series, 17.5. Ex type British Museum.

This species is nearest to C. CUPREUS but is altogether different in color, being darker in all its hues. The skulls also are not at all in accord, the differences mentioned being very conspicuous when a comparison is made. The unique example is in the British Museum Collection, and all that is recorded of its history is that it came from Brazil, collected by Castelnau.

CALLICEBUS CUPREUS (Spix).

Callithrix cuprea Spix, Sim. et Vespert. Bras., 1823, p. 23, pl. XVII; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 233; V, 1855, p. 114; Reichenb., Vollständ. Naturg. Affen, 1862, p. 23, fig. 59; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 54; E. Bartl., Proc. Zool. Soc. Lond., 1871, p. 219; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 236; Thomas, Proc. Zool. Soc. Lond., 1880, p. 394; Forbes, Handb. Primates, I, 1894, p. 160, pl. XIV.

Callithrix discolor I. Geoff., Archiv. Mus. Hist. Nat. Paris, V, 1845, p. 551, pl. XXVIII; *Id.* Compt. Rend., XXVII, 1848, p. 498; *Id.* Cat. Primates, 1851, p. 41; Casteln., Expéd. Amér. Sud, Mamm., I, 1855, p. 11; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 114; Dahlb., Stud. Zool. Fam. Reg. Anim.

Nat., fasc. I, 1856, pp. 151, 153; Reichenb., Vollständ. Naturg. Affen, 1862, p. 23, fig. 62; Sclat., Proc. Zool. Soc. Lond., 1871, p. 219. (footnote).

RED TITI MONKEY.

Type locality. Banks of the Solimoens River, Brazil. Type in Munich Museum.

Geogr. Distr. Regions of the Peruvian Amazons; Solimoens, Ucayali, Huallaga and Copataza rivers; and Andoas, Ecuador.

Color. Face black; top of head gray, becoming orange rufous on occiput, or buff-yellow on forehead grading into ferruginous on occiput, these colors due solely to the tips of the hairs which are black on the basal portion; upper parts reddish brown and black, the former being the tips of the hairs, producing an annulated appearance; sides of head, limbs, hands, feet, and under parts coppery red; tail mixed grayish white and black, the basal portion like the back; hairs on ears coppery red. Ex type Munich Museum.

Measurements. Total length, 900; tail, 290; foot, 85; ex Spix's type. Skull: occipito-nasal length, 56; zygomatic width, 39; intertemporal width, 36; palatal length, 18; width of braincase, 34; median length of nasals, 6; length of upper molar series, 14; length of mandible, 38; length of lower molar series, 15. Ex specimen Brit. Mus.

There is some variation among individuals of this species, and some have the upper parts a uniform Vandyke brown, palest on the center of the back, without the annulations so characteristic of the typical style; the tail also is mixed ochraceous buff and black with a buffy tip, the rest of the pelage however, being coppery red as in the others.

Specimen in Paris Museum marked CALLITHRIX DISCOLOR I. Geoff. et Deville, type, cannot be separated from the present species. It is somewhat faded in the lighter colors, but otherwise resembles C. CUPREUS. There are several examples in the Munich Museum obtained by Spix and all marked *'Type.'* From one of these my description was taken.

Mr. E. Bartlett, (l. c.) says that this Monkey is equally distributed, but not so numerous as SAIMIRI USTUS, in fact it may be regarded as rather rare, that is in eastern Peru. He procured it at Cashiboya on the Ucayali and at Santa Cruz on the Huallaga.

CALLICEBUS CALIGATUS (Wagner).

Callithrix caligata Wagn., Wiegm., Archiv., I, 1842, p. 357; *Id.* Schreb., Säugth. Suppl., V, 1855, p. 116; Reichenb., Vollständ. Naturg. Affen, 1862, p. 25, fig. 69; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 237.

Callithrix castaneo-ventris Gray, Ann. Mag. Nat. Hist., XVII, 1866, p. 58; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 56; von Pelz., Brazil. Säugth., 1883, p. 19; Forbes, Handb. Primates, I, 1894, p. 164.

RED-BELLIED TITI MONKEY.

Type locality. Banks of the River Madeira near Borba, Brazil.

Geogr. Distr. Western Brazil.

Genl. Char. Resembles C. CUPREUS, but the head is black on top, and hands and feet are black instead of coppery red.

Color. Top of head from forehead to between ears blackish maroon; face black; the upper parts are reddish brown like C. CUPREUS annulated with black darkest on dorsal line; limbs and under parts coppery red; hands and feet black with numerous yellow hairs mixed; tail black at base, grayish white for the rest of its length; a second specimen has the tail black for basal third, then mixed gray and black, and tip grayish white. Hairs on ears black.

Measurements. Size about equal to C. CUPREUS. Skull: occipito-nasal length, 67.3; Hensel, 44.2; zygomatic width, 48.9; palatal length, 28.5; median length of nasals, 17; length of upper molar series, 14.3; length of mandible, 48.5; length of lower molar series, 26.6. Ex specimen 8.5.9.9. British Museum.

CALLICEBUS MELANOCHIR (Kuhl).

Callithrix melanochir Kuhl, Beitr. Zool., 1820, p. 40; Desm., Mamm., 1820, p. 88; Wied, Beitr., II, 1820, p. 114; *Id.* Abhandl. Akad. Münch., IV, 1828, fig. 6; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 230; V, 1855, p. 113; I. Geoff., Cat. Primates, 1851, p. 40; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 153-154; Reichenb., Vollständ. Naturg. Affen, 1862, p. 22, fig. 57; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 57; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 233; Forbes, Handb. Primates, I, 1894, p. 165.

BLACK-HANDED TITI MONKEY.

Type locality. Bahia.

Geogr. Distr. East coast of Brazil, from the Rio St. Mattheus to Sertem de Bahia.

Color. Male. Entire back from between shoulders to tail, and flanks ferruginous; head, neck, shoulders and outer side of limbs iron gray, lightest on top of head and nape; inner side of limbs and under parts, blackish gray; tail brownish gray, more brown than gray at base; hands reddish brown; feet black.

Female. Forehead reddish; top of head yellowish gray; upper parts sooty gray tinged with reddish; outer side of limbs and under parts yellowish brown; hands and feet blackish brown; tail reddish brown. These specimens are in the Paris Museum. The ♂ was obtained from the Prince of Wied, and must be a co-type from Brazil, the ♀ was purchased from Parzudaki, no locality.

Measurements. Skull: occipito-nasal length, 63; zygomatic width, 40; intertemporal width, 32; palatal length, 20; breadth of braincase, 35; median length of nasals, 11; length of upper molar series, 17; length of mandible, 43; length of lower molar series, 18.5. Ex British Museum specimen.

This species has been usually attributed to the Prince of Wied, and Kuhl himself attaches the Prince's name to the one he gives the species. But the 'Beiträge' in which the Prince's description is found, was published six years after Kuhl's work appeared, and even if he took a MS. name given by the Prince to the species, it would stand as Kuhl's who first described it in 1820.

CALLICEBUS PÆNULATUS Elliot.

Callicebus pænulatus Elliot, Ann. Mag. Nat. Hist., 8th Ser., 1909, p. 244.

Type locality. Andoas on the Pastas River, Ecuador. Type in British Museum.

Genl. Char. Fur very long, thick and fluffy; mantle uniform color, distinct from back; arms from elbows, and hands, feet and legs to above knees, uniform color.

Color. Forehead grizzled ochraceous, the hairs black with ochraceous tips, this being the dominant color; crown and occiput rich cinnamon rufous, the color produced by tips of hairs; mantle tawny ochraceous uniform, extending behind shoulders; middle of back dark hair brown, grading into tawny ochraceous on the rump; flanks dark grizzled brownish gray; hair on ears, cheeks, arms from above elbows, hands, legs from above knees, feet, inner side of limbs, chin, throat and under parts, rich dark burnt sienna; tail very long, grizzled white and black, the orange buff of the basal portion of the hairs showing through, darkest at base and the tip buff. The root of the tail is tawny ochraceous like the rump. Ex type British Museum.

Measurements. Total length, 850; tail, 520, (skin). Skull: occipito-nasal length, 57.3; Hensel, (skull broken); zygomatic width, 40.6; palatal length, 29.1; median length of nasals, 9.3; length of upper molar series, 14.2; length of mandible, 41.3; length of lower molar series, 15.8.

This species differs in many ways from all others of the genus. It is the only one of the C. CUPREUS style with a uniformly colored mantle, and one so long and thick as to resemble a mane; the red on arms and legs extends much higher than on any other species, and the fur everywhere is longer and thicker. A single specimen was procured by Mr. Buckley at Andoas.

CALLICEBUS EGERIA Thomas.

Callicebus egeria Thos., Ann. Mag. Nat. Hist., II, 1908, 8th Ser., p. 89.

Type locality. Teffé, Middle Amazon, Brazil. Type in British Museum.

Color. Top of head grizzled gray; neck and upper parts grizzled grayish brown; arms from elbows, legs from below knees, and feet a rather dark burnt sienna hue; hands like feet but the fingers grayish with a rufous wash; arms above elbows, and legs above knees, grizzled grayish brown like back; cheeks, throat, and under parts with under side of limbs, dark burnt sienna; tail grizzled gray and black, darkest on basal third. Ex type British Museum.

Measurements. Total length, 760; tail, 430; hind foot, 84. Skull: occipito-nasal length, 67.4; Hensel, 48.6; zygomatic width, 46.7; palatal length, 27.9; median length of nasals, 17.4; length of upper molar series, 14.8; length of mandible, 47.1; length of lower molar series, 16. Ex type British Museum.

The type is a young adult male, paler in general coloration than C. CUPREUS to which it bears the closest resemblance, but differs in its gray crown.

CALLICEBUS LEUCOMETOPA (Latorre).

Callithrix cuprea leucometopa Latorre, Ann. Soc. Espagn. Hist. Nat., No. 29, 1900, p. 83.

Type locality. Ecuador. Type in Madrid Museum.

Geogr. Distr. Ecuador.

Genl. Char. Similar to C. CUPREUS but forehead white or grayish white, top of head gray.

Color. Face black; forehead white or grayish white; top of head iron gray; sides of head, throat, and under parts, chestnut red; lower part of outer and inner side of limbs, hands and feet, chestnut red; the upper part of limbs iron gray; tail black with gray mixed, remainder silvery gray; hair on ears grayish white.

Measurements. Size of C. CUPREUS. Skull: occipito-nasal length, 56; zygomatic width, 37; intertemporal width, 29; palatal length, 28; width of braincase, 33; median length of nasals, 7; length of upper molar series, 14; length of mandible, 38; length of lower molar series, 15. Example in British Museum.

CALLICEBUS SUBRUFUS Elliot.

Callicebus subrufus Elliot, Ann. Mag. Nat. Hist., XX, 1907, 7th Ser., p. 192.

Type locality. Pachite, Ucayali River, Peru. Altitude between 400 and 500 feet. Type in British Museum.

Genl. Char. Allied to C. LEUCOMETOPA, but color entirely different.

Color. Face black; a narrow black bar on forehead above eyes, succeeded by a broader white one; rest of head on top, neck and entire upper parts bright russet, becoming darker and more reddish on the rump, the hairs being slate at base, then alternately ringed with slate and bright russet, or on the rump with slate and dark russet or reddish; arms to elbows, and thighs to knees, rest of outer side of limbs, hands and feet bright chestnut red; side of face, whiskers, inner side of limbs, throat, chest, and middle of abdomen bright chestnut red; fingers and toes yellowish gray; tail, basal third black, with chestnut hair mixed with black at the root, remainder light gray above, nearly whitish beneath; hairs on ears white. Ex type British Museum.

Measurements. Size about equal to that of C. LEUCOMETOPA. Skull: occipito-nasal length, 51; Hensel, 40; zygomatic width, 35; intertemporal width, 29; palatal length, 18; breadth of braincase, 33; median length of nasals, 6? (broken); length of upper molar series, 15; length of mandible, 35; length of lower molar series, 16. Ex type British Museum.

While allied to C. LEUCOMETOPA the great difference the present animal exhibits in its coloration makes it easily recognizable. In its gray fingers and toes it shows a leaning towards C. ORNATUS, but in other respects it has no resemblance to that species. The unique example in the Collection of the British Museum is fully adult, but not old.

CALLICEBUS HOFFMANNSI Thomas.

Callicebus hoffmannsi Thos., Ann. Mag. Nat. Hist., II, 1908, 8th Ser., p. 89.

Type locality. Urucurituba, Santarem, Lower Amazon, Brazil. Type in British Museum.

Genl. Char. Tail long, under parts very light color.

Color. Top of head, hands and feet black, the hairs with white tips which give the dominant hue, making these parts appear as if frosted; upper parts of body dark rufous, the hairs being black and ringed and tipped with rufous; upper side of arms with the hairs black, tipped with white; outer side of legs hoary, paler than arms; cheeks and under parts, and inner side of arms and legs, all but cheeks very sparsely haired, yellowish white; tail black with a brownish gloss. Ex type British Museum.

Measurements. Total length, 815; tail, 440; foot, 91. Skull: occipito-nasal length, 68; Hensel, 42; zygomatic width, 43; palatal length, 27; median length of nasals, 17; length of upper molar series, 16.3. Ex type British Museum.

While resembling C. DONACOPHILUS from Bolivia somewhat on the upper parts of the body, this species is easily recognized by its black tail and hoary head, black hands and feet, and pale under parts. The specimen is old with teeth much worn.

CALLICEBUS ORNATUS Gray.

Callithrix ornata Gray, Ann. Mag. Nat. Hist., XVII, 4th Ser., 1866, p. 57; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 238.

Callithrix ornatus Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 55.

THE ORNATE TITI MONKEY.

Type locality. Near Bogota, Colombia. Type in British Museum.

Geogr. Distr. Colombia, Peru, South America.

Genl. Char. Similar to C. CUPREUS and C. CALIGATUS, but the top of head is mixed black and coppery red behind the white forehead, and hands and feet yellowish gray.

Color. Face black, naked; forehead white, top of head coppery red and black; nape, neck and upper parts mixed gray, black and ochraceous, giving it a grizzled appearance with an ochraceous wash; outer side of limbs gray; sides of head, (where the hairs take the shape of whiskers), inner side of limbs and entire under parts coppery red; hands and feet yellowish gray; tail mixed gray and black. Hairs on ears white. Ex type British Museum.

Measurements. Skull: intertemporal width, 32; breadth of braincase, 36; palatal length, 18; zygomatic width, 42; median length of nasals, 8.5; length of upper molar series, 15; length of mandible, 42; length of lower molar series, 17; occipital region gone. Ex type British Museum.

Callicebus remulus Thomas.

Callicebus remulus Thos., Ann. Mag. Nat. Hist., II, 1908, 8th Ser., p. 88.

Type locality. Santarem, Lower Amazon, Brazil. Type in British Museum.

Genl. Char. Similar to C. hoffmannsi but under parts rufous.

Color. Forehead yellowish white; top of head gray; nape and dorsal region like C. hoffmannsi, being dark rufous, the black hairs being ringed and tipped with that color; sides of body grizzled grayish brown; outer sides of limbs grayish brown grizzled, but paler than the flanks; under side of limbs and under parts rufous, this color showing on side of legs from above; hands and feet grayish white; whiskers pale rufous, base of hairs yellowish; tail black, the hairs yellowish at base; root of tail rufous; ears black sparsely covered with gray hairs. Ex type British Museum.

Measurements. Total length, 705; tail, 420; foot, 82. Skull: occipito-nasal length, 53.3; Hensel, 42.4; zygomatic width, 48; palatal length, 27.2; median length of nasals, 17.1; length of upper molar series, 14.3; length of mandible, 39; length of lower molar series, 25.5. Ex type British Museum.

The type which represents the species in the British Museum Collection is a young adult with the teeth entirely unworn. In various respects it resembles C. hoffmannsi and it comes from the same place, Santarem, but the gray hands and feet, and rufous under parts easily distinguish it. It is desirable to have more specimens so as definitely to determine whether two species of this genus really are found in practically the same locality, or whether age and sex may not account for the different coloring in the types of C. remulus and C. hoffmannsi.

The type of the present species is much smaller than that of C. hoffmannsi as would be expected considering the difference of age.

Callicebus donacophilus (D'Orbigny).

Callithrix donacophilus D'Orbigny, Voy. Amér. Mérid., Mamm., 1847, p. 10, pl. V; Wagn., Schreb., Säugth. Suppl., I, 1840, p.

232; V, 1855, p. 116; I. Geoff., Cat. Primates, 1851, p. 40; Dahlb., Stud. Zool. Fam. Reg. Anim Natur., fasc. I, 1856, pp. 152, 154; Reichenb., Vollständ. Naturg. Affen, 1862, p. 23, fig. 61; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 240.

D'ORBIGNY'S TITI MONKEY.

Type locality. Province of Sara, Bolivia.

Geogr. Distr. Found in high forests, Province of Sara, Central Bolivia, alt. 2,100 feet. British Museum Collection.

Color. Top and sides of head reaching to the throat, varying from orange rufous and black to cinnamon rufous and black; upper parts varying from dark grayish brown to a reddish brown washed with gray, grading into deep russet on the rump; flanks, hairs broadly tipped with grayish white, forming a whitish fringe along the sides; arms to elbows like back; forearms silvery gray and black, the hairs black at base with silvery gray tips; outer side of legs gray and deep russet; inner side of limbs, and under parts dark cinnamon rufous, darkest on belly; hands and feet yellowish gray to iron gray; fingers and toes whitish; tail, grayish white at base, yellowish gray for the remainder; hairs on ears white; face covered with short white hairs.

Measurements. Total length, 745; tail, 415; foot, 90; ears, 35. Skull: occipito-nasal length, 55.6; Hensel, 43.9; zygomatic width, 47.5; palatal length, 15.7; median length of nasals, 7.4; length of upper molar series, 14; length of mandible, 42.1; length of lower molar series, 16. Ex specimen 7.8.2.12. British Museum.

The specimen from which D'Orbigny's figure was taken is in the Paris Museum, and marked "type de la figure." It is greatly faded, but still in the main corresponds to the description given above from fresh examples in the British Museum, obtained in practically the same locality from which D'Orbigny's type came. The real type of C. DONACOPHILUS cannot be identified, as all the examples are marked as 'types' and there is no way of ascertaining which was the one originally described.

CALLICEBUS EMILIÆ Thomas.

Callicebus emiliæ Thos., Ann. Mag. Nat. Hist., VII, 8th Ser., 1911, p. 606.

Type locality. Lower Amazon. Type in British Museum.

Genl. Char. Back, bay or hazel.

Color. Upper surface rich rufous bay or hazel; hairs on nape grizzled brown and whitish, tips rufous; crown grayish; ears ashy gray, long hairs with black tips; indistinct line on flanks, arms from wrists to shoulders, and legs from hips to ankles grizzled ashy gray; under surface and inner side of limbs bright orange rufous. Tail at base chestnut brown, then black with a whitish tuft at end.

Measurements. Total length, 720; tail, 400; foot, 81. I have not seen this specimen.

CALLICEBUS PALLESCENS Thomas.

Callicebus pallescens Thos., Ann. Mag. Nat. Hist., XX, 7th Ser., 1907, p. 161.

Callithrix donacophilus Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, 1870, p. 55, (nec D'Orb.).

Type locality. Chaco in Paraguay, 30 miles north of Concepcion. Type in British Museum.

Genl. Char. Size small; fur thick, soft.

Color. Above pale grayish, generally suffused with pinkish buff, palest on rump; basal half of fur dark brown, remainder pinkish buff; long hairs ringed with black and white; under parts and inner sides of limbs rufous; hairs of head yellow and ringed with black; muzzle and lips whitish; hands blackish, white hairs on fingers; feet grayish white; outer side of arms with hairs buff at base, tips black; legs dark ochraceous; tail yellowish brown, hairs ringed with black, and white tipped. Ex type British Museum.

Measurements. Total length, 755; tail, 390; hind foot, 84. Skull: total length, 58.5; Hensel, 43; zygomatic width, 38; intertemporal width, 36.7; median length of nasals, .90; length of upper molar series, 14.2; length of mandible, 45.5; length of lower molar series, 15.9. Ex type British Museum.

This is a pale yellowish brown species, with certain resemblances to C. DONACOPHILUS, but evidently quite distinct. The type is unique.

CALLICEBUS MOLOCH (Hoffmannsegg).

Cebus moloch Hoffm., Mag. Ges. Nat. Freund. Berlin, X, 1807, p. 86.

Simia (Callithrix) moloch Humb., Rec. Obs. Zool., I, 1811, (1815), p. 358.

Callithrix moloch E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 14; Kuhl, Beitr. Zool., 1820, p. 40; Desm., Mamm., 1820, p. 87; E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 19, 10me Leçon; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 238; V, 1855, p. 113; I. Geoff., Archiv. Mus. Hist. Nat., Paris, IV, 1844, p. 38, pl. III; *Id.* Cat. Primates, 1851, p. 41; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 151, 153; Reichenb., Vollständ. Naturg. Affen, 1862, p. 23, fig. 60; Bates, Nat. Amaz., II, 1863, p. 98; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 55; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 239; von Pelz., Bras. Säugeth., 1883, p. 10; Weldon, Proc. Zool. Soc. Lond., 1884, p. 89, fig. 3; Forbes, Handb. Primates, I, 1894, p. 162.

Saguinus moloch Less., Spec. Mamm., 1840, p. 151; *Id.* Nouv. Tabl. Reg. Anim., 1842, p. 8.

THE ARABASSU TITI.

Type locality. Banks of the Rio Para.

Geogr. Distr. Banks of the Rio Para near the mouth of the Rio Tapajos, Lower Amazon, Brazil.

Genl. Char. Cheeks, chest and belly reddish.

Color. Top of head, nape, shoulders and outer sides of arms, brownish gray, the hairs with black tips; rest of upper parts reddish brown, hairs annulated with black; hind limbs similar to arms but paler; sides of head, under parts and inner side of limbs orange red; hands and feet gray; tail reddish brown and black at base, black and gray washed with brown for remainder, the hairs being pale brownish gray with black tips. Ex type Paris Museum.

Measurements. Size of C. CUPREUS. Skull: occipito-nasal length, 53; Hensel, 40; zygomatic width, 36; intertemporal width, 31; length of nasals, 10; length of upper molar series, 15; length of mandible, 36; length of lower molar series, 17.

At Aveyros on the Amazon, Bates (l. c.) met with this species, the only monkey in that locality, and which was called by the Indians *Thacapu-sai*. Although allied to the Cebi he found that it possessed none of their restless activity, but was dull and listless. It goes in small flocks of five or six individuals, and runs along the main boughs of the trees. He obtained an individual one morning at sunrise on a low fruit tree behind his house, the only instance in his experience of one being captured in such a situation, for it must have descended to the ground and walked some distance to reach it. Though kept as a pet by the natives, it is not very amusing and does not live long in captivity.

CALLICEBUS CINERASCENS (Spix).

Callithrix cinerascens Spix, Sim. et Vespert. Bras., 1823, p. 20, pl. XIV, juv.; Reichenb., Vollständ. Naturg. Affen, 1862, p. 24, fig. 67; Forbes, Handb. Primates, I, 1894, p. 161.

THE REED TITI MONKEY.

Type locality. Forest of the Potomaio and Iça rivers, on the borders of Peru. Type in Munich Museum.

Color. Hairs on forehead yellowish white at base, then black, and tips grayish white; back of neck yellowish; upper parts of body rufous, becoming blackish on rump; cheeks and chin white with a grayish subterminal black ring; limbs brown, hairs tipped with grayish white, and with a subterminal black ring; under parts of body grayish white; hands and feet similar to limbs, but darker almost black, the hairs tipped with gray; tail brownish black, tip reddish, the hairs, except those of the tip, being yellowish white at base, remainder black.

Measurements. Total length, 865; tail, 465; foot, 90. Ex type Munich Museum. There was no skull.

The above description was taken from the specimen labelled as Spix's type in the Munich Museum. As will be noticed it bears no resemblance whatever to the figure on plate XIV of Spix's work, and is generally quite different from his description, at the same time it is not like any of the described species of the genus. In general appearance it is a reddish brown animal with nearly all the hairs tipped with grayish white, and most of them with a subterminal black ring.

The tail appears black with a red tip. I have never seen a gray or ashy CALLICEBUS like Spix's figure, and doubt if one exists in any collection. If the present example in the Munich Museum is really the type of C. CINERASCENS the general idea of its appearance will have to be changed from Spix's figure of an ashy gray animal, to a reddish brown one speckled with grayish white. If Spix's draughtsman intended to represent the present type by the figure on plate XIV, he made a grievous failure. The type specimen is unique. Spix's description is as follows: "Ce singe a presque le taille du Saimiri. Son occiput et le dos sont d'un gris rougisseant, l'avant front, les quatres pieds et le dessous du corps d'un gris de souris, et la queue noirâtre. La tête est très allongée, la face aigue, brunâtre, nue sur les sourcils et sur le nez, et du reste vêtue de petits poils cendrés, entremélés de quelques poils roides noirs; des poils plus longs, cendrés, rayonnent autour l'extérieur de la face presque jusqu'à la gorge; les poils du corps ne sont pas si longs comme chez les autres espèces de ce genre. Les oreilles sont un peu tronquées, nues en dedans, et tres pelues en déhors. Les mains et les pattes porte la même couleur que la reste des pieds; les dents et les ongles ont presque la même forme que ceux de la précédente espèce, (C. AMICTUS). J'ai trouvé ce singe dans les fôrets de la rivière Potomaio ou Iça aux frontières du Pérou."

CALLICEBUS NIGRIFRONS (Spix).

Callithrix nigrifrons Spix, Sim. et Vespert. Bras., 1823, p. 15, pl. XV; Wagn., Abhand. Akad. Münch., V, 1848, p. 447; *Id.* Schreb., Säugth. Suppl., V, 1855, p. 110; Reichenb., Vollständ. Naturg. Affen, 1862, p. 121, fig. 56; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 232; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 56; von Pelz., Brasil. Säugeth., 1883, p. 19; Forbes, Handb. Primates, I, 1894, p. 164.

BLACK-FRONTED TITI MONKEY.

Type locality. Province of Minas Geræs, Brazil. Type in Munich Museum.

Geogr. Distr. From Province of Minas Geræs to that of Rio de Janeiro, where the species meets with C. PERSONATUS.

Genl. Char. Forehead and stripe to ears black, but in some examples the stripe is wanting; throat grayish, not black.

Color. Face naked, black; forehead with a black stripe to ears; hands black; feet reddish brown, toes black; top of head and neck buff, hairs with a subterminal black ring; hairs on upper parts of body pale orange ochraceous with a subterminal black ring; forearms black, the pale orange rufous of base of hairs showing through; arms from shoulders to elbows like back; hinder parts and inner side of limbs buff; tail tawny, hairs blackish towards tips. Ex type Munich Museum.

Measurements. Total length, 960; tail, 455; foot, 100. Ex type Munich Museum.

The above description taken from Spix's type will hardly answer for the figure on Spix's plate, which does not represent the species, nor agree with his description. The various descriptions in Spix's volume, should have the chief attention, and species be determined by them, for not a few of his figures are quite unlike the types, (making all allowance for the lapse of time and possible discoloration of the specimens), and would certainly mislead an investigator trying to determine his material. There is a certain amount of variation in coloring existing among examples of this species, and some do not have the black stripe on forehead to reach the ears, and the apical half of the tail is much lighter, being at times cream buff.

CALLICEBUS GIGOT (Spix).

Callithrix gigot Spix, Simiar. et Vespert. Bras., 1823, p. 22, pl. XVI; I. Geoff., Cat. Primates, 1851, p. 40; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 112; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 152-154; Casteln., Expéd. Amér. Sud, 1855, p. 10; Reichenb., Vollständ. Naturg. Affen, 1862, p. 24, fig. 68; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 234; von Pelz., Bras. Säugeth., 1883, p. 19; Weldon, Proc. Zool. Soc. Lond., 1884, p. 6, figs. 1, 2, 4, 5, 6; Forbes, Handb. Primates, I, 1894, p. 165.

Callithrix gigo Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1876, p. 57.

GRAY TITI MONKEY.

Type locality. Near Ilhéos, south of Bahia, Brazil. Type in Munich Museum.

Geogr. Distr. South of Bahia near Ilhéos, (Spix); New Freibourg, between the Rio Parahyba and the mountains north of Bay of Rio de Janeiro, (Schlegel).

Color. Male. Face naked, black; narrow line on forehead and side of face; ears, hands and feet black; hairs on top of head short, black with grayish white tips; hairs on upper parts long, woolly, blackish brown at base, remainder reddish brown; limbs and flanks like back but darker, and blackish on outer side; under parts yellowish gray; tail cinnamon rufous, with many black hairs intermingled. Ex type Munich Museum.

Female. Has the lower back decidedly reddish, otherwise like the male.

Measurements. Total length, 975; tail, 520; foot, 105. Ex type Munich Museum. Skull: occipito-nasal length, 58; Hensel, 46; zygomatic width, 38; intertemporal width, 31; palatal length, 20; breadth of braincase, 33; median length of nasals, 9; length of upper molar series, 15; length of mandible, 43; length of lower molar series, 18. Ex specimen in British Museum.

Spix's figure of this species, like that of C. NIGRIFRONS, in no way represents the type, which is a darker animal and of quite a different color. Spix's description however is fairly correct.

CALLICEBUS PERSONATUS (E. Geoffroy).

Callithrix personatus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 113, (Espèce inédite); Kuhl, Beitr. Zool., 1820, p. 40; Desm., Mamm., 1820, p. 86; Spix, Simiar. et Vespert. Bras., p. 18, pl. XII; Wagn., Schreb., Säugth. Suppl., I, 1840,

p. 229; V, 1855, p. 110; Tschudi, Faun. Peruan., 1844, p. 46· I. Geoff., Cat. Primates, 1851, p. 40; Wallace, Proc. Zool. Soc. Lond., 1852, pp. 107-109; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 153-155; Reichenb., Vollständ. Naturg. Affen, 1862, p. 21, figs. 54-55; Mivart, Proc. Zool. Soc. Lond., 1865, pp. 555-584; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 56; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 231.

Simia (*Callithrix*) *personatus* Humb., Rec. Obs. Zool., I, 1811, (1815), p. 357.

Pithecia melanops Vig., Cat. Coll. Zool. Soc. Lond., p. 6.

Cebus personatus Blainv., Ostéog., 1841, Atl., Cebus, pl. VI; Less., Nouv. Tabl. Reg. Anim., 1842, p. 87.

Saguinus personatus Less., Spec. Mamm., 1840, p. 162.

MASKED TITI MONKEY.

Type locality. "le Brésil." Type unknown.

Geogr. Distr. Region of the Upper Amazon, south to latitude 14°.

Genl. Char. Head to behind ears, and throat black.

Color. Male. Face naked, black; head to behind ears, throat, hands and feet black; nape yellowish white; back pale reddish brown becoming a bright hazel on the rump; limbs cream buff tinged with gray; chest orange rufous, passing into blackish brown on abdomen; tail burnt sienna red.

Female. Head and throat black like the male; nape, upper part of back and arms yellowish white; middle of back russet grading into a reddish brown on rump; flanks and legs grayish white; center of abdomen pale ochraceous rufous, sides grayish white.

The males vary greatly in coloring even in the same locality, and some have the upper part of back and arms whitish yellow like the nape, or a dark brownish gray, with lower back and rump dark grayish brown, or reddish brown with the under parts uniform dark grayish brown.

The female is therefore much paler than the male, with a reddish brown back.

Measurements. Skull: occipito-nasal length, 70; Hensel, 55; zygomatic width, 49; intertemporal width, 35; palatal length, 23.5; breadth of braincase, 37; median length of nasals, 11; length of upper molar series, 18; length of mandible, 52; length of lower molar series, 20.

CALLICEBUS BRUNNEUS (Wagner).

Callithrix brunnea Wagn., Wiegm., Archiv., 1842, I, p. 357; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 118; Reichenb., Vollständ. Naturg. Affen, 1862, p. 25, fig. 70; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 230; von Pelz., Brasil. Säugeth., 1883, p. 20.

BROWN MASKED TITI.

Type locality. Falls of the Bonaneira, Rio Mamoré, Brazil. Type in Vienna Museum.

Color. Face black; forehead black; hairs tipped with red; these red tips are absent on the center of the forehead in front, which is jet black, but behind this and on the sides the red tips dominate, and the color is dark red, the black not showing; whiskers dark red, hairs tipped with black, just the opposite to the coloring of the forehead; top and back of head, back and sides of neck, and entire upper parts pale yellowish brown, the hairs being rufous and tipped with yellowish brown, which becomes the dominant color of the upper parts; throat, breast, under parts, flanks and limbs on inner and outer sides reddish chestnut, some hairs on inner side of arms tipped with black; hands and feet black; tail reddish chestnut, hairs with black tips, tip of tail yellowish brown; tufts on ears black. Ex type Vienna Museum.

Measurements. Total length, 815; tail, 440; foot, 90. Ex type Vienna Museum.

Three specimens are in the Vienna Museum, a male and two females obtained by Natterer. It is a strongly marked species not to be confounded with any other. Unfortunately there is no skull. The general appearance is that of a reddish animal with a yellowish brown back and black forehead. There is no difference in color between the sexes.

FAMILY 2. CEBIDÆ.

Subfamily 1. Alouattinæ.

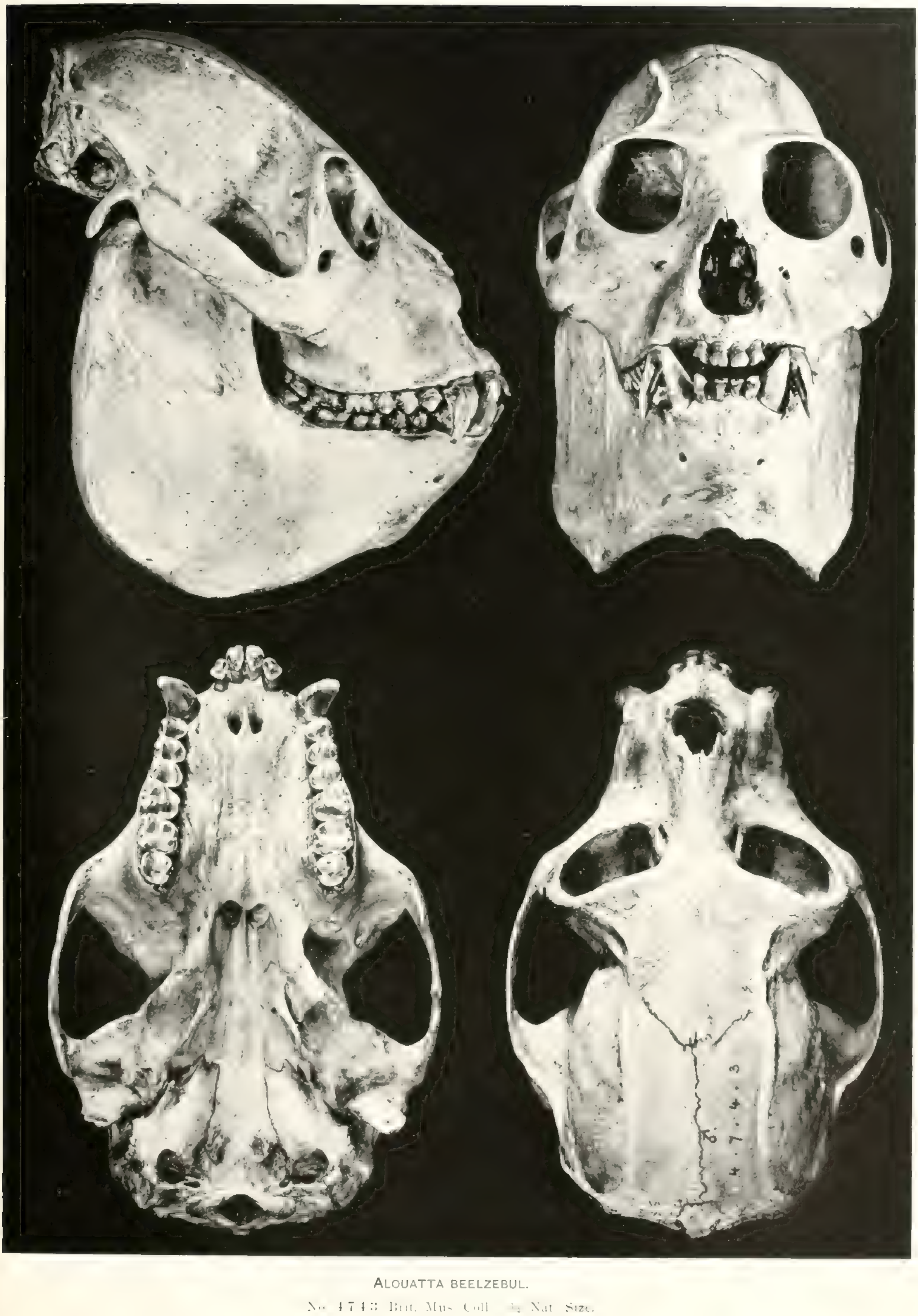
GENUS ALOUATTA. HOWLING MONKEYS.

$$\text{I. } \frac{2-2}{2-2}; \quad \text{C. } \frac{1-1}{1-1}; \quad \text{P. } \frac{3-3}{3-3}; \quad \text{M. } \frac{3-3}{3-3} = 36.$$

ALOUATTA Lacépède, Tabl. Div. Sous-div. Ordres et Genres, Mamm., 1799, p. 4. Type *Simia beelzebul* Linnæus.
Mycetes Illig., Prodr. Syst. Mamm. et Avium, 1811, p. 70.
Stentor E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 107.

Head pyramidal; body thick, heavy; face naked; chin bearded; tail long, prehensile, naked at tip; thumb opposable. Skull: braincase depressed; occipital region truncate; angle of mandible enormously developed; lower incisors vertical; canines rather strong; claws convex, powerful; hyoid greatly inflated.

This subfamily has but one genus, embracing the largest species of monkeys found in the New World. Their body is thick-set and heavy, the mandible at the angle is very deep and massive, the throat is large and thick, and the larynx extraordinarily developed. The basihyal is greatly enlarged, and is expanded into a bony capsule which is lined by a continuation of the thyroid sac, and so the animal is able, by means of this peculiar formation, to produce the great volume of sound for which it is noted, and from which the trivial name of Howling Monkey is derived. The tone is deep and far reaching, resounding through the forest for an estimated distance of three miles. The tail is long and prehensile, but partially naked, and while of considerable advantage to the animal for grasping, does not attain the sensibility and extreme mobility of the same organs of the species of Ateleus, whose tails are equal in their service to a fifth hand. The thumb of the Howling Monkey is well developed and opposable. The face is naked, and a heavy beard hangs beneath the chin, especially thick in old males. Their movements are slow and their tempers sullen, and the animal is practically untamable and soon dies when held in captivity. Their intelligence is of a very low order, and altogether the animals of this genus are among the least attractive of the Primates.



Alouatta beelzebul.

No. 4743 Brit. Mus. Coll. ¾ Nat. Size.

The majority of the species are black or partly so, although six are clothed in fur exhibiting shades varying from straw color to dark red. In some species the sexes are alike in color, in others quite different, and the young of some resemble their parents, while those of others are totally unlike the adults, and they can therefore be arranged in two groups. The fur is short on the bodies of some species, quite long on others, but is usually thickest on the head.

Wallace (l. c.) writing of the Howling Monkeys, under the genus *Mycetes,* on the Lower Amazon, states that they are generally abundant; the different species, however, are found in separate localities, (*M.*) BEELZEBUL being confined apparently to the Lower Amazon in the vicinity of Para; a black species, (*M.*) CARAYA to the Upper Amazon, and a red species, (*M.*) URSINA to the Rio Negro and Upper Amazon. Much confusion seems to exist with regard to the species of Howlers, owing to the difference of color in the sexes of some species. The red and black species of the Amazon, however, are of the same color in both sexes. These animals are semi-nocturnal in their habits, uttering their cries late in the evening and before sunrise, and also on the approach of rain. Humboldt observes that the tremendous noise they make can only be accounted for by the great number of individuals that unite in its production. His own observations, and the unanimous testimony of the Indians, prove this not to be the case. One individual only makes the howling, which is certainly of a remarkable depth and volume and curiously modulated, but on closely remarking the suddenness with which it ceases and again commences, it is evident that it is produced by one animal, which is generally a full grown male. On dissecting the throat, much of our wonder ceases, for besides the bony vessel formed by the expansion of the "Os hyoides," there is a strong muscular apparatus which seems to act as a bellows in forcing a body of air through the reverberating bony cavity.

LITERATURE OF THE SPECIES.

1766. *Linnæus, Systema Naturæ.*
ALOUATTA BEELZEBUL first described as *Simia beelzebul;* and A. SERICULUS first described as *Simia sericulus* from Cartagena, Colombia.

1777. *Erxleben, Systema Regni Animalis.*
The two species described by Linnæus are here placed in the genus CEBUS.

1788. *Gmelin, Systema Naturæ.*
This Author copying Linnæus places the two species in *Simia.*

1792. *Kerr, Animal Kingdom.*
ALOUATTA BEELZEBUL renamed *Simia Sapajus beelzebul.*

1811, (1815). *Humboldt et Bonpland, Recueil d'Observations de Zoologie et d'Anatomie Comparée.*
In this work five species under the genus *Stentor* are described, two for the first time, the Black Howler from Southern Brazil, A. CARAYA as *Simia caraya,* and the Red Howler from the Upper Amazon A. URSINA as *Simia ursina; Simia guariba* = A. URSINA; *Simia flavicaudata* probably = A. URSINA; and *S. straminea* = A. SENICULUS.

1812. *E. Geoffroy Saint-Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*
Six species are designated in this contribution and placed in the genus *Stentor,* viz., (*S.*) SENICULUS; (*S.*) URSINUS; (*S.*) *stramineus* = A. SENICULUS; (*S.*) *fuscus* = A. URSINA juv.; (*S.*) *flavicaudatus* = A. URSINA; and (*S.*) *niger* = A. CARAYA.

1820. *Kuhl, Beiträge zur Zoologie und Vergleischenden Anatomie.*
Geoffroy's list is here repeated with one additional name, *Mycetes rufimanus* = A. BEELZEBUL Linn.

1820. *Desmarest, Mammalogie et Description de Mammifères.*
In the list of Howlers given in this work the species enumerated by Kuhl are recorded without additions, and the same errors repeated.

1823. *Spix, Simiarum et Vespertilionum Brasiliensium.*
Four species are here given under the genus *Mycetes.* (*M.*) *fuscus* = A. URSINA juv.; *M. stramineus* = A. SENICULUS; M. *barbatus* = A. CARAYA; and *M. discolor* = A. BEELZEBUL juv. or A. CARAYA immature.

1829. *E. Geoffroy Saint Hilaire, in Mémoires du Muséum d'Histoire Naturelle.*
ALOUATTA SENICULUS redescribed as *Mycetes chrysurus.*

1829. *Fischer, Synopsis Mammalium.*
Six species of Howlers are in this work placed in the genus CEBUS. (*C.*) SENICULUS; (*C.*) *stramineus* = A. SENICULUS; (*C.*) URSINUS; (*C.*) BEELZEBUL; (*C.*) CARAYA; and (*C.*) *flavicaudata* = A. URSINA.

1830. *Fischer, Addenda, Emendanda et Index ad Synopsis Mammalium.*

The list of the previous Author is here repeated without change.

1840. *Wagner, Schreber, Die Säugthiere in Abbildungen nach der Natur mit Beschreibungen, Supplementband.*
Two species with numerous varieties are here enumerated under the genus *Mycetes.* (*M.*) SENICULUS; var. *β Stentor chrysurus* Geoff., = A. SENICULUS; var. *γ* (*M.*) URSINUS valid species; (*M.*) *fuscus* = A. URSINA juv.; (*M.*) CARAYA; (Part.).

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*
In his arrangement of the Primates the Author places the Monkeys of the New World in his Tribu Deuxième. The species of ALOUATTA, which he calls *Mycetes,* are but three in number; (*M.*) SENICULUS; (*M.*) BEELZEBUL; *Mycetes* DISCOLOR Spix, = A. CARAYA as var. A; and *M.* CARAYA with three varieties, var. A. (*M.*) *barbatus* Spix, = A. CARAYA; var. B. *Simia flavicaudata* Humb., = A. URSINA; and var. *C. Stentor stramineus* E. Geoff., = A. SENICULUS.

1845. *J. E. Gray, in Annals and Magazine of Natural History.*
Nine species are here given under *Mycetes.* (*M.*) URSINUS; (*M.*) *laniger* = A. SENICULUS; (*M.*) *bicolor* = A. URSINA; (*M.*) *auratus* = A. SENICULUS; (*M.*) CARAYA; (*M.*) *barbatus* = A. CARAYA; (*M.*) BEELZEBUL; and (*M.*) VILLOSUS, described for the first time.

1848. *J. E. Gray, in Proceedings of the Zoological Society of London.*
ALOUATTA PALLIATA first described.

1851. *I. Geoffroy Saint-Hilaire, Catalogue des Primates.*
In the list of Howling Monkeys in this Catalogue five species are given only two of which are properly named, and all are placed in the genus *Mycetes.* (*M.*) SENICULUS; (*M.*) *chrysurus* = ALOUATTA SENICULUS; (*M.*) URSINUS; (*M.*) *rufimanus* = A. BEELZEBUL; (*M.*) *niger* = A. CARAYA.

1855. *Wagner, Schreber, Die Säugthiere in Abbildungen nach der Natur mit Beschreibungen, Supplementband.*
Seven species are here recorded with varieties, under the genus *Mycetes:* (*M.*) *fuscus* = A. URSINA juv.; (*M.*) URSINUS; with var. *β.* (*M.*) SENICULUS valid species; var. *γ. Stentor chrysurus* Geoff., = A. SENICULUS; (*M.*) CARAYA; with var. *β* (*M.*) VILLOSUS valid species; (*M.*) *rufimanus* = A. BEELZEBUL; (*M.*) *flavicaudatus* = A. URSINA; (*M.*) PALLIATUS; (*M.*) *stramineus* = A. SENICULUS.

1862. *Slack, in Proceedings of the Academy of Natural Sciences of Philadelphia.*
Five species with partial synonymy are here given. A. SENICULUS; and A. URSINA; *A. nigra* = A. CARAYA; A. BEELZEBUL; A. PALLIATA.

1862. *Reichenbach, Die Vollständigste Naturgeschichte der Affen.*
The species of ALOUATTA are here included in the genus *Mycetes* as follows: (*M.*) SENICULUS; (*M.*) ***chrysurus*** = A. SENICULUS; (*M.*) URSINUS; (*M.*) ***barbatus*** = A. CARAYA; (*M.*) ***flavicaudatus*** = A. URSINUS; (*M.*) BEELZEBUL; (*M.*) ***stramineus*** = A. SENICULUS; (*M.*) PALLIATUS; and (*M.*) VILLOSUS.

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in the Collection of the British Museum.*
The following forms are here included in the genus *Mycetes.* (*M.*) URSINUS; (*M.*) SENICULUS; (*M.*) ***bicolor*** = A. URSINUS; (*M.*) ***laniger*** = A. SENICULUS; (*M.*) PALLIATUS; (*M.*) ***auratus*** = A. SENICULUS; (*M.*) CARAYA; (*M.*) ***barbatus*** = A. CARAYA; (*M.*) BEELZEBUL; (*M.*) VILLOSUS.

1876. *Schlegel, Muséum d'Histoire Naturelle des Pays-Bas.*
A list of the species of ALOUATTA, placed in the genus *Mycetes* with synonymy and geographical distribution as then understood, with a catalogue of specimens in the Leyden Museum is here given. (*M.*) ***flavicauda*** Humboldt, is considered a distinct species, simply on Humboldt's account of it, no examples ever having been procured. (*M.*) ***niger*** = A. CARAYA; (*M.*) BEELZEBUL; (*M.*) VILLOSUS; (*M.*) PALLIATUS; (*M.*) ***fuscus*** = A. URSINA juv.; (*M.*) URSINUS; and (*M.*) SENICULUS. No new species described.

1902. *Merriam, in Proceedings of the Biological Society of Washington.*
Alouatta palliata mexicana first described.

1902. *Thomas, in Novitates Zoologicæ.*
Alouatta palliata coibensis first described.

1903. *Festa, in Bolletino du Museo Torino.*
Alouatta æquatorialis first described.

1904. *J. A. Allen, in Bulletin of the American Museum of Natural History.*
ALOUATTA SENICULUS redescribed as *A. s. rubicunda,* and *A. s. caucensis.*

1908. *J. A. Allen, in Bulletin of the American Museum of Natural History.*
ALOUATTA PALLIATA redescribed as *A. p. metagalpa.*

1910. *D. G. Elliot, in Annals and Magazine of Natural History.*
A. MACCONNELLI; A. INSULANUS; A. JUARA; and A. SARA first described.

1911. *G. Dollman, in Annals and Magazine of Natural History.*
A species of *Alouatta* from Miritibi, Maranhao, referred to *M. discolor* Spix.

1912. *D. G. Elliot, in Bulletin of the American Museum of Natural History, New York.*
ALOUATTA ULULATA first described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES AND SUBSPECIES.

The members of the genus ALOUATTA are found from the State of Vera Cruz, Mexico, on the north, through Central America and the Island of Coiba to the Province of Corrientes, Brazil, on the south, and westward to Colombia, Ecuador, Peru and Bolivia.

Our knowledge of the ranges of the Brazilian species of this genus is only partial, as it is also of the other Primates inhabiting that Republic, for in the interior of that great country there are thousands of miles of mountains and forests where no white man has ever penetrated, and whose faunæ are quite unknown. Also, when Collectors have failed to bring specimens back with them, it is at times impossible to determine what are the species they refer to in their publications, and errors of distribution can therefore easily be made. In Brazil, in the interior, we have practically no knowledge of the animals which inhabit the dense forests at any considerable distance from the rivers, for explorers have penetrated, in most instances, but a few miles from their banks, and how far a known species may range is, in many cases, quite impossible to state. Therefore in giving the range of most of the South American species of Primates, we are restricted to the places where they have been obtained, or seen by reliable and competent observers.

To begin at the most northern point where a species of ALOUATTA dwells, we find, in the eastern portion of the State of Vera Cruz, Mexico, *A. palliata mexicana,* the only species of the genus inhabiting that Republic. In Guatemala, Central America, A. VILLOSUS occurs, extending its range into Honduras; while in Nicaragua we have A. PALLIATA, which is also an inhabitant of Costa Rica and Panama. On

Coiba Island, off the west coast of Panama, *A. p. coibensis* has been procured. On the Island of Trinidad one species dwells, A. INSULANUS; and in the British and French Guianas, and probably also in Dutch Guiana, (though no examples from there were obtainable), to the coast north of the Amazon, A. MACCONNELLI has been obtained. In Venezuela in the forests of the Lower Orinoco, (Humboldt), and in the maritime Provinces of Brazil from Bahia to Espirito Santo, A. URSINA occurs, and also according to Tschudi, under the name of *Mycetes flavicaudatus* it is found in Peru, in which case it must necessarily inhabit the intervening portions of Brazil. From the vicinity of Para, on the Rio Muria (Natterer), and between the Rio Xinges and Island of Marajo, (Spix), on the Rio Araguay, (I. Geoff.), and in the vicinity of Borba near the mouth of the Rio Madeira, (Natterer), A. BEELZEBUL occurs. Bates states that the natives assert there is a "yellow handed" monkey on the Island of Marajo, which may be this species. On the Lower Amazon in Maranhao A. ULULATA appears to have its range. Proceeding on in eastern Brazil, A. CARAYA ranges from the Province of Bahia to that of Corrientes in Argentina; having been observed in the low forests of Bahia and Minas Geræs (Spix), in the Province of Goyas, (Castelnau), and on the Upper Rio Paraguay, and near the town of Matto-Grosso (Natterer), and also at the junction of the Rio Parana and Rio Paraguay, Argentina, (Rengger). On the Rio Juara, a tributary of the Upper Amazon, A. JUARA has been obtained. In Colombia, A. SENICULUS is found, and according to Spix who obtained a specimen, it also occurs in the forest between the Rio Negro and Rio Solimoens, his example having been secured near the borders of Peru. In Ecuador at Vinces on the west coast A. ÆQUATORIALIS was procured; and finally, in Bolivia in the Province of Sara, A. SARA occurs.

KEY TO THE SPECIES.

A. General color in males black or partly black.
  a. Sexes different.
    a.′ Male all black; females and young straw color .... *A. caraya.*
    b.′ Male with back rich chestnut red; female raw umber .... *A. ululata.*
  b. Sexes alike.
    a.′ All black .... *A. villosus.*

- *b.'* Black, base of hairs reddish brown, hands and feet pale reddish brown. . . . . *A. beelzebul.*
- *c.'* Black, back mixed black and golden, flanks yellowish brown.
  - *a.''* Size large . . . . *A. palliata.*
  - *b.''* Size small . . . . *A. p. mexicana.*
  - *c.''* Size very small . . . . *A. p. coibensis.*

B. General color chocolate brown . . . . *A. æquatorialis.*

C. Coloring mostly shades of red.

- *a.* Upper parts of body uniform golden red, limbs darkened, young black . . . . *A. ursina.*
- *b.* Middle of back straw color, lighter than the rest of the upper parts, young like adults. . . . . *A. seniculus.*
- *c.* Upper parts uniform golden yellow . . . . *A. macconnelli.*
- *d.* Upper parts uniform red, limbs bright red. . . . *A. insulanus.*
- *e.* Upper parts golden red, limbs maroon . . . . *A. juara.*
- *f.* Upper parts uniform pale golden orange. . . . . *A. sara.*

ALOUATTA CARAYA (Humboldt).

Simia (*Stentor*) *caraya* Humb., Rec. Obs. Zool., I, 1811 (1815), p. 355.

**Stentor niger* E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 108.

**Stentor stramineus* E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 108, ♀, (nec Spix).

Mycetes niger Kuhl, Beitr. Zool., 1820, p. 31; I. Geoff., Cat. Primates, 1851, p. 53; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, p. 175; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 149; von Iher., Proc. Zool. Soc. Lond., 1899, p. 517.

Cebus caraya Fisch., Syn. Mamm., 1820, p. 44.

Mycetes barbatus Spix, Simiar. et Vespert. Bras., 1823, p. 46, pl. XXXII ♂, XXXIII ♀; Gray, Ann. Mag. Nat. Hist., 1845, p. 220; Casteln., Expéd. Amér. Sud, 1855, p. 4; Reichenb., Vollständ. Naturg. Affen, 1862, p. 68, figs. 166-168; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 41.

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*These species are not marked "Espèce inédite," which Geoffroy usually stated beneath his description when he believed the animal had not previously been described.

Mycetes caraya Wagn., Schreb., Säugth. Suppl., I, 1840. p. 180; V, 1855, p. 68; Less., Spec. Mamm., 1840, p. 122; *Id.* Nouv. Tabl. Règn. Anim., 1842, p. 6; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 41; Sclat., Proc. Zool. Soc. Lond., 1872, p. 6, fig.; Kerr, Proc. Zool. Soc. Lond., 1892, p. 174.

Alouatta nigra Slack, Proc. Acad. Nat. Scien. Phil., 1862, p. 518; Forbes, Handb. Primates, I, 1894, p. 195.

BLACK HOWLER.

Type locality. Paraguay.

Geogr. Distr. Villa Nova, Upper Amazon, (Bates); southern Brazil, Argentina and Bolivia. Banks of the Pilcomayo, Argentina, (Kerr); Sao Paulo, (von Ihering); Province of Goyas, (Castelnau); Provinces of Bahia and of Minas Geræs, (Spix); Bolivia, (D'Orbigny).

Genl. Char. Feet naked; size large; beard large; rami of mandible greatly developed; sexes different in color. Hair at forehead directed backward, meeting that on back of head which is directed forward at this part, though radiating from a central spot.

Color. Male adult. Hair deep black, the hands and feet and tail sometimes showing yellowish brown hairs, probably the remains of the immature pelage.

Immature Male. Flanks, inner side of limbs, under side of tail, and under parts of body, buff yellow, rest of pelage black.

Female. Straw color, darkest on the back which is tinged with olive; tips of hair on frontal ridge, black.

Young. Entirely straw color.

Measurements. Male. Skull: occipito-nasal length, 101; zygomatic width, 83; intertemporal width, 42; palatal length, 42; breadth of braincase, 53; median length of nasals, 20; length of upper molar series, 33; length of mandible, 97; length of lower molar series, 40.

The type of *Stentor stramineus* E. Geoff., (nec Spix), is in the Paris Museum. It was obtained from the Cabinet de Lisbonne in 1808, and is a female of A. CARAYA. The upper parts are bistre, darkest on dorsal line and rump; brow, beard and limbs yellowish, hands yellowish, but the feet are blackish brown; tail rather dark brown on basal half, paler on remainder. On a label beneath the stand is the following statement: "*Stentor stramineus* de quelques auteurs: c'est la femelle de *Stentor niger,* type de l'espèce du Cabinet de Lisbonne, 1808."

Alouatta ululata Elliot.

Alouatta ululata Elliot, Bull. Am. Mus. Nat. Hist., N. Y., 1912, p. 32.

Alouatta discolor Dollm., (nec Spix), Ann. Mag. Nat. Hist., VI, 1910, 8th Ser., p. 422.

Type locality. Miritibi, Maranhao. Type in British Museum.

Geogr. Distr. Lower Amazon; Maranhao, Brazil.

Genl. Char. Sexes unlike; male with chestnut red back, female raw umber.

Color. Male. Forehead, and whiskers extending beneath chin, black; top of head brownish black; arms, hands, feet, rump, and outer side of legs black; indistinct blackish stripe on middle of back; rest of upper parts and flanks rich chestnut red, in certain lights suffused with a golden color; upper edge of thighs chestnut red; forearms beneath, black; rest of under parts and limbs beneath nude; fingers and toes covered with long yellowish red hairs; tail black with numerous golden red hairs intermingled; tip chestnut red like flanks. Ex type in British Museum.

Female. Tuft above middle of forehead, and whiskers black; top and sides of head above ears, upper part of body and flanks raw umber, with a golden tinge on head, and an indistinct dark dorsal line; arms black with a strong olive tinge; legs similar but paler; hands similar to arms, but hairs grading at knuckles, and extending over fingers, yellowish gray; feet more golden red, and toes golden yellow; tail like legs at base grading to a mixed golden red and black, with the tip golden red. Body and limbs beneath, naked. Ex type in British Museum.

Measurements. Male. Total length, 1,145; tail, 585; foot, 140. (Skin). Skull: total length, 120.5; occipito-nasal length, 101.4; Hensel, 104.3; zygomatic width, 78.4; breadth of braincase, 52.4; palatal length, 47.7; median length of nasals, 25.5; length of upper molar series, 33.5; length of mandible, 95.1; length of lower molar series, 40.5. Ex specimen in British Museum. The above descriptions were taken from specimens loaned to me by my friend Guy Dollman, Esq., of the British Museum, and received from Miritibi, Maranhao, Brazil.

Examples of this monkey were received at the British Museum representing both sexes and were supposed by Mr. Dollman to be the long lost *Mycetes discolor* Spix, and were so described by him under that name (l. c.). I have already remarked upon the dissimilarity frequently existing between Spix's descriptions and his types, and also between the latter and the colored figures, and the present seems to be a striking case of this unfortunate state of affairs.

Spix's description of *discolor* in several points leans more towards this species than it does towards his type, which is a rather small young adult black example with fingers, toes and tip of tail pale rusty red, and is most probably a young example of A. BEELZEBUL while his description and figure do not agree in several particulars, viz., "Les quatre pieds sont presque entièrement d'un noir luisant, excepté les doigts très allongés, qui sont garnis de poils courts et roux," while his figure shows brown feet and blackish brown hands; and of the body he says "le tronc rougeâtre au milieu, et *noir luisant aux côtés,*" which does not describe any species of *Alouatta* known, and his figure exhibits an animal with a blackish brown back and reddish flanks and shoulders; while the type is black with only a very faint brownish tint on the flanks. "La queue pas épaisse est noire * * * et rougisseante au bout" which is correct of the type itself, but the figure has a black tail for the entire length.

Spix's figure more nearly represents a male A. BEELZEBUL with an immature coat, retaining in some respects the colors more like the female upon the flanks and under parts, though somewhat too red on the flanks, but regarding it in all its coloring it is more nearly a figure of a young adult male *A. beelzebul* which the type specimen itself would seem to prove to be the fact, while Spix's description cannot be applied to any species of Howler known at the present time. I am greatly indebted to my friend Mr. Dollman for the opportunity of describing this distinct species.

ALOUATTA VILLOSUS (Gray).

Mycetes villosus Gray, Ann. Mag. Nat. Hist., XVI, 1845, p. 220; Reichenb., Vollständ. Naturg. Affen, 1862, p. 76, no fig.; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 41; Sclat., Proc. Zool. Soc. Lond., 1872, p. 6, fig. in text; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 151; Alston, Biol. Centr. Amer., Mamm., I, 1879, p. 5, pl. I; Forbes, Handb. Primates, I, 1894, p. 199.

GUATEMALAN HOWLER. Mono, native name.

Type locality. Guatemala. Type in British Museum.

Geogr. Distr. Eastern and north eastern Guatemala; Honduras.

Color. Entire pelage, hands, feet and tail jet black, base of hairs Prout's brown.

Measurements. Total length, 650; tail, 630; foot, 128. Ex type British Museum.

Mr. Salvin has given in Sclater's paper on this species, (l. c.), the following account of it. "The Mycetes of Guatemala is commonly known as the 'Mono.' It is abundant throughout the virgin forests of the eastern portion of the Republic, but is unknown in the forest clad slopes which stretch towards the Pacific Ocean. In the former region it is found at various altitudes over a wide expanse of country. I have heard its cry on the shores of the Lake Yzabel, and all through the denser forests of the valley of the river Polochie. It is very common, from the steep mountain road which lies between the upland village of Peruba and S. Miguel-Tucuru, and especially in the wilderness of uninhabited forest which stretches from Teleman to the Lake Yzabel. In the unbroken forest country which occupies the whole of the northern portion of the Vera Paz, from Coban and Cahabon to the confines of Peten, it is also abundant; for seldom an hour passes but the discordant cry of the Mono strikes upon the ear of the traveller as he threads the lonely path to Peten. The elevation of this district varies from about 700 to 3,000 feet; and the Mycetes is found at all heights. When travelling through this forest in 1862, I was dependent for the animal food to supply my party of Indians entirely upon my gun; and Monos contributed not a little to the larder. The Indians eat monkey without demur; but the meat looks dark and untempting. For my own part I far preferred the delicate Tinamou or Curassow, a sufficient supply of which never failed for my own consumption. Perhaps there is no district in Vera Paz where Monos are more abundant than the mountains of Chilasco, a cold and damp region, elevated at least 6,000 feet above the sea but where the forest growth is of the densest description and trees of the largest size abound. It was here that the specimens were obtained that are now in the British Museum. The wonderful cry whence Mycetes gets its trivial name of Howling Monkey is certainly most striking, and I have sometimes endeavored to ascertain how far this cry may be heard. It has taken me an hour or more to thread the forest undergrowth from the time the cry first struck my ear, to, when, guided by the cry alone, I stood under the trees where the animals were. It would certainly not be overestimating the distance to say two miles. When the sound came over the lake of Yzabel unhindered by trees, a league would be more like the distance a Mono's cry could be heard. These animals are found in companies of five or six. They are usually met with in the branches of the highest trees, and when disturbed, crawl sluggishly along the boughs. The young, as well as the females, are of the same dense black as the old males, but the hair is shorter and not so glossy."

In the article from which the above extract has been taken, Dr. Sclater endeavors to prove that the black form of the northern and the one from the southern part of South America are distinct, on account of the different manner in which the hair on the forehead is inclined forward or reversed. It is quite true that the southern and northern Black Howlers are distinct, but the way in which the hair lies on the forehead is not a character to be relied upon, but merely an individual peculiarity exhibited by members of this genus. This is the more misleading in the Howlers, for in other groups, notably ATELEUS, the direction of the hair on the head is a character that is of considerable importance for the arrangement of the different species in their proper position in the genus.

ALOUATTA BEELZEBUL (Linnæus).

Simia beelzebul Linn., Syst. Nat., I, 1766, p. 37; Bodd., Elench. Anim., 1784, p. 61.

Cebus beelzebul Erxl., Syst. Reg. Anim., 1777, p. 44.

Simia Sapajus beelzebul Kerr., Anim. Kingd., 1792, p. 75, No. 64.

Mycetes rufimanus Kuhl, Beitr. Zool., 1820, p. 51; Desm., Mamm., 1820, p. 79; Tschudi, Faun. Peruan., 1844, p. 37; Geoff., Cat. Primates, 1851, p. 53; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 69; Casteln., Expéd. Amér. Sud, Mamm., I, 1855, p. 4; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 175, fig. 172.

Mycetes discolor Spix, Simiar. et Vespert. Bras., 1823, p. 48, pl. XXXIV.

Mycetes beelzebul Gray, Ann. Mag. Nat. Hist., XVI, 1845, p. 220; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 41; Reichenb., Vollständ. Naturg. Affen, 1862, p. 67, fig. 172; Bates, Nat. Riv. Amaz., I, 1863, p. 295.

Alouatta beelzebul Forbes, Handb. Primates, I, 1894, p. 197.

YELLOW-HANDED HOWLER.

Type locality. "in Brasilia."

Geogr. Distr. Lower Amazon, vicinity of Para to Rio Madeira, Brazil. Peru, (Tschudi).

Genl. Char. Like A. CARAYA but base of hairs reddish brown.

Color. Head and upper parts black tinged with brown, base of hairs reddish brown; outer side of arms and legs black; inner side of limbs and under parts yellowish brown; tail brownish black at base, reddish brown for remainder of length; hands and feet pale reddish brown.

Measurements. Total length, 914; tail, 469. Skull: total length, 111; occipito-nasal length, 92; Hensel, 93; intertemporal width, 39; palatal length, 40; breadth of braincase, 50; median length of nasals, 15; zygomatic width, 75; length of upper molar series, 33; length of mandible, 90; length of lower molar series, 40.

Bates states (l. c.) "in the neighborhood of Para a reddish colored species prevails, (*M.*) BEELZEBUL; in the narrow channels near Breves I shot a large, entirely black kind; another yellow-handed species, according to the report of the natives, inhabits the Island of Marajó, which is probably the *M. flavimanus* of Kuhl"; (*rufimanus* is probably intended = A. BEELZEBUL); "some distance up the Tapajos the only howler found is a brownish black species." The type of *Mycetes discolor* Spix, is in the Munich Museum. It is a rather small black animal and may be an immature example of the present species or A. CARAYA, but more probably of A. BEELZEBUL, as A. CARAYA has a more southern habitat. Spix procured his specimen at Fort Carupa on the Amazon.

ALOUATTA PALLIATA (Gray).

Mycetes palliatus Gray, Proc. Zool. Soc. Lond., 1848, p. 138, pl. VI; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 71; Reichenb., Vollständ. Naturg. Affen, 1862, p. 70, fig. 172; Frantz., Wiegm., Archiv., XXXV, 1869, p. 254; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 40; Sclat., Proc. Zool. Soc. Lond., 1872, p. 7; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 152; Alst., Biol. Centr. Amer., I, Mamm., 1879, p. 4; Anders., Cat. Mamm. Ind. Mus. Calc., Pt. I, 1881, p. 83; Forbes, Handb. Primates, I, 1894, p. 202; Elliot, Mamm. Middle Amer. and West Indies, F. C. M. Pub., Pt. II, 1904, p. 726, fig. CXXXVIII, Zool. Ser.; *Id.* Check-L. Mamm. N. Amer. Cont. and W. Indies, F. C. M. Pub., VI, 1905, p. 533, Zool. Ser.; *Id.* Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 555, pl. LXXXI.

Alouatta palliata Slack, Proc. Acad. Nat. Scien. Phil., 1862, p. 519, (Sallé).

Alouatta palliata metagalpa Allen, Bull. Am. Mus. Nat. Hist., 1908, p. 670.

MANTLED HOWLER.

Type locality. Shores of Lake Nicaragua.

Geogr. Distr. Nicaragua, Costa Rica, Panama, Central America. Type in Paris Museum.

Genl. Char. Face naked; hairs on forehead short, stiff, upright; those on back of head longer; beard moderate.

Color. Head, throat, shoulders, arms, legs, hands, feet and tail black, with a tinge of maroon; middle of back and upper part of sides black mixed with golden; lower parts of flanks, hairs much lengthened, yellowish brown, base of hairs much paler; under parts very sparsely covered with dark chestnut hairs. Ex type British Museum. Some specimens are entirely black.

Measurements. Total length, 1,142; tail, 585; foot, 145. Skull: occipito-nasal length, 98; intertemporal width, 40; palatal length, 42; breadth of braincase, 51; median length of nasals, 20; length of upper molar series, 33; length of mandible, 90; length of lower molar series, 40. Ex type British Museum.

The type locality of this species is the shore of Lake Nicaragua, as stated by Sallé to Sclater, (l. c.) and *A. p. metagalpa* Allen therefore becomes a synonym.

ALOUATTA PALLIATA MEXICANA Merriam.

Alouatta palliata mexicana Merr., Proc. Biol. Soc. Wash., XV, 1902, p. 67; Allen, Bull. Am. Mus. Nat. Hist., N. Y., 1904, p. 40; Elliot, Mamm. Middle Amer. and West Indies, F. C. M. Pub., IV, Pt. II, 1904, p. 727, Zool. Ser.; *Id.* Check-List Mamm. N. Amer. Cont. and W. Indies, F. C. M. Pub., VI, 1905, p. 533, Zool. Ser.; *Id.* Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 555, Zool. Ser.

MEXICAN MANTLED HOWLER.

Type locality. Minatitlan, State of Vera Cruz, Mexico. Type in United States National Museum.

Geogr. Distr. Eastern Mexico.

Genl. Char. Similar to A. PALLIATA, but smaller; rostrum narrower, teeth small; coronoid process broadly rounded.

Color. Similar to A. PALLIATA. Forehead, limbs, upper part of throat, rump and tail black; occiput and entire upper parts to rump mixed golden and brownish black, golden predominating, the hairs being golden banded with black and tipped with golden; long hairs on flanks golden; hairs on under parts scantily distributed, mummy brown. Ex type United States National Museum.

Measurements. Total length, 1,190; tail, 651; foot, 148. Skull: occipito-nasal length, 91.9; Hensel, 88.4; zygomatic width, 80.5; palatal length, 48.9; intertemporal width, 40.2; median length of nasals, 19.8; length of upper molar series, 32; length of mandible, 86.4; length of lower molar series, 39. Ex type United States National Museum.

The type is an extreme example, as there is an entire absence of the jet black hue on the upper parts to be seen to a more or less considerable extent in other specimens, some indeed having the upper parts nearly all black with very little golden to be seen, these being the other extreme.

A series of specimens of this subspecies from southern Vera Cruz establishes the fact that it is a much duller colored animal than the one from Central America, the flanks having none of the golden rufous witnessed, for example, in specimens from Chiriqui

ALOUATTA PALLIATA COIBENSIS Thomas.

Alouatta palliata coibensis Thos., Novitat. Zool., IX, 1902, p. 135; Elliot, Mamm. Middle Amer. and West Indies, F. C. M. Pub., IV, Pt. II, 1904, p. 727; *Id.* Check-L. Mamm. N. Amer. Cont. and W. Indies, F. C. M. Pub., VI, 1906, p. 533, Zool. Ser.; *Id.* Cat. Mamm. Field Columb. Mus., 1906, p. 556, Zool. Ser.

ISLAND OF COIBA HOWLER.

Type locality. Coiba Island off west coast of Panama. Type in British Museum.

Genl. Char. Like A. PALLIATA, but smaller. An insular race.

Color. Head, upper part of back, arms, legs, hands, feet, and tail black; middle of back Prout's brown, hairs tipped with golden; long hairs on flanks shining ochraceous buff; abdomen dark brown. Ex type British Museum.

Measurements. Total length, 1,140; tail, 580; foot, 130. Skull: occipito-nasal length, 87; Hensel, 84; intertemporal width, 40; palatal length, 36; breadth of braincase, 50; zygomatic width, 79; median length of nasals, 15; length of upper molar series, 30; length of mandible, 83; length of lower molar series, 37. Ex type British Museum.

ALOUATTA ÆQUATORIALIS Festa.

Alouatta æquatorialis Festa, Boll. Mus. Torino, XVIII, 1903, p 3.

Mycetes niger Thos., Proc. Zool. Soc. Lond., 1880, p. 394, ex Intac, Ecuador, (nec Geoffroy).

ECUADOR HOWLER MONKEY.

Type locality. Vinces, west coast of Ecuador. Type in Zoological Museum, Turin.

Genl. Char. Similar to A. PALLIATA, but general color chocolate brown instead of black.

Color. Male adult. General color chocolate brown, the hairs at base yellowish fulvous, with yellowish tips. Hair on flanks long, golden yellow. Hands, feet and tail chocolate brown.

Female adult. The chocolate brown color of the male is less conspicuous, the general dominating hue being yellowish fulvous.

Young Male. General color dark gray, many hairs being of a golden hue particularly at the tips.

M. Festa states (l. c.) that this species is nearly extinct in the Province of Vinces, and is only found in certain places on some plantations of cacao, where hunting is forbidden.

It seems to have its nearest relationship with A. PALLIATA.

ALOUATTA URSINA (Humboldt).

Simia (Stentor) ursina Humb., Rec. Obs. Zool., I, 1811, (1815), p. 355, pl. XXX.

Simia (Stentor) flavicauda Humb., Rec. Obs. Zool., I, 1811, (1815), p. 355?

Simia (Stentor) quariba Humb., Rec. Obs., I, 1811, (1815), p. 355.

Stentor ursinus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 108.

Stentor flavicaudatus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 108.

Stentor fuscus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 108; *Id.* Cours Hist. Nat. Mamm., 1828, p. 21, 10me Leçon.

Mycetes ursinus Kuhl, Beitr. Zool., 1820, p. 29; Desm., Mamm., 1820, p. 78; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 179; var. V, 1855, p. 67; Gray, Ann. Mag. Nat. Hist., XVI, 1845, p. 218; I. Geoff., Cat. Primates, 1851, p. 52; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 175; Reichenb., Vollständ. Naturg. Affen, 1862, p. 65, figs. 159, 161; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 39; Schleg., Mus. Pays-Bas, Simiæ, 1870, p. 156.

Mycetes fuscus Kuhl, Beitr. Zool., 1820, p. 29; Desm., Mamm., 1820, p. 78; Spix, Simiar. et Vespert. Bras., 1823, p. 43, pl. XXX; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 180; V, 1855, p. 67.

Mycetes flavicaudatus Kuhl, Beitr. Zool., 1820, p. 30; Desm., Mamm., 1820, p. 79; Tschudi, Faun. Peruan., 1844, p. 38; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 70.

Cebus ursinus Fisch., Syn. Mamm., 1829, p. 43.

Cebus flavicaudata Fisch., Syn. Mamm., 1829, p. 44.

Mycetes bicolor Gray, Ann. Mag. Nat. Hist., XVI, 1845, p. 219; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 40.

Mycetes flavicauda Reichenb., Vollständ. Naturg. Affen, 1862, p. 66, no fig.; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 147.

Alouatta ursina Slack, Proc. Acad. Nat. Scien. Phil., 1862, p. 517; Forbes, Handb. Primates, I, 1894, p. 193.

BROWN HOWLER.

Type locality. Venezuela, (Humboldt).

Geogr. Distr. Venezuela, Nouvelle Andalousie et de la Nouvelle Barcelone, et les bords du Bas Orinique Maratime, (Humboldt); districts of Brazil from Espirito Santo to Bahia; Peru, (Tschudi).

Genl. Char. Head and body uniform coloration.

Color. Male. Face black; head and body shining yellowish or golden red, passing into a darker red upon the limbs, hands and tail; whiskers bright umber red; the beard black; narrow line of hairs on center of chest, widening upon the abdomen, blackish red-brown akin to chestnut; basal half of tail above burnt umber, hairs tipped with golden, remainder shining golden red; dorsal line slightly darker than flanks; feet blackish brown. *Young* uniform black.

Measurements. Male. Skull: occipito-nasal length, 103; total length, 121; Hensel, 106; intertemporal width, 42; palatal length, 43; zygomatic width, 78; breadth of braincase, 53; median length of nasals, 19; length of upper molar series, 33; length of mandible, 97; length of lower molar series, 40. Vertebræ, Cerv. 7, Dor. 14, L. 5, S. 3. Espirito Santo specimen.

There are only six adult males, one immature male, one adult female and two immature examples in the British Museum, that I can satisfactorily determine to be this species. They were all collected with two exceptions, by Robert, at Engenheiro Reeve, Espirito Santo, and Roca Nova, Parana, Brazil, and one from Barri, Rio Negro, Collector unknown. The adults from Espirito Santo resemble each other in color, varying but slightly in the depth of the red; one male not procured by Robert was obtained at St. Catherines and agrees with the others in color, and a young ♀ from San Sebastian, Sao Paulo, was obtained from A. Hempel. The skulls, however, do vary very much, the differences when of the same sex, probably caused by age. Comparing the skulls of two adult males the shape of the braincase at once attracts attention, where in one it is shorter and flatter above, with two ridges starting from the center of the upper edge of the orbit, curving towards the center of the skull, but keeping 20 mm. apart, and terminating on the edge of the occipital on either side of the interparietal. Another, with a longer braincase, has these ridges coalesce and form a ridge or low crest down the center of the skull, broadening out in the rear, and terminating at sides of interparietal. These two formations so totally different occur in adult males from the same locality. These skulls also exhibit differences which might possibly under other conditions be taken as sufficient to cause a specific separation. The premaxillaries in the longer skull extend forward beyond the canines, coming to almost a point in the center, causing the alveolar border of the outer pair of incisors to be lower than that of the middle pair, while in the other skull the alveolar border of the incisors is perfectly straight, causing the width between the canines to be much greater, nearly 4 mm. Other differences are also observable, such as in the width of the pterygoid processes, the width of the basi-occipital, length of the pterygoid fossa, width and shape of the palatal arch, width and shape of the occipital region, and the curve of the frontal and nasals, all these, with others not mentioned, serve to show the great individual variation that exists in the skulls of this species even among animals of the same sex, and practically the same age, dwelling in the one locality. A larger series would undoubtedly show greater diversities. The young of this species are jet black, the golden brown appearing on the tips of the hairs as they grow older, this gradually extending from the head to the body and limbs, and growing more and more red until in the fully adult the pelage assumes the appearance as described for the males given above. Mr. Robert's series from Roca Nova, Parana, exhibits this change finely. This is the style that has been described as distinct by Kuhl as *Mycetes fuscus*.

Alouatta (*Simia*) *flavicauda* was described by Humboldt (l. c.) from the Province of Jaen. He did not see this Howler living, but describes it from some skins procured by natives, and no specimens answering to this description have ever been received by any Museum. Its peculiarities are the extremely long hair on the body, and the color of the tail "d'un noir olivâtre et ornée latéralement de deux stries jaunes." A tail colored like that has not been seen thus far with a species of Alouatta in any collection. Tschudi states (l. c.) that this monkey is found in Peru in 11° Latitude, but I am not aware that he sent any specimens to Europe. Kuhl states (l. c.) that a specimen was in the Paris Museum, but this must have been a mistake. Geoffroy does not mention it, and it is not there now.

I have placed Humboldt's species among the synonyms of *A. ursina* with a ?; and the doubt can only be settled satisfactorily by the acquisition of specimens.

ALOUATTA SENICULUS (Linnæus).

Simia seniculus Linn., Syst. Nat., I, 1766, p. 37; Bodd., Elench. Anim., 1784, p. 61.

Cebus seniculus Erxl., Syst. Reg. Anim., 1777, p. 46; Fisch., Syn. Mamm., 1829, p. 42.

Alouatta seniculus Lacépèd., Mém. Instit., 1800, III, p. 89; Slack, Proc. Acad. Nat. Scien. Phil., 1863, p. 516; Forbes, Handb. Primates, I, 1894, p. 192, pl. XVIII.

Mycetes seniculus Illig., Prodr. Syst. Mamm. et Av., 1811, p. 70; Desm., Mamm., 1820, p. 77; Less., Spec. Mamm., 1840, p. 117; Wagn., Schreb., Säugth. Suppl., I, 1840, p. 179; V, 1855, p. 68; Gray, Ann. Mag. Nat. Hist., XVI, 1845, p. 219; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 40; I. Geoff., Cat. Primates, 1851, p. 52; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 175; Reichenb., Vollständ. Naturg. Affen, 1862, p. 163, figs. 156-157; Flow., Proc. Zool. Soc. Lond., 1862, p. 335; Sclat., Proc. Zool. Soc. Lond., 1863, p. 374; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 156; Forbes, Proc. Zool. Soc. Lond., 1880, p. 632, (footnote).

Simia (*Stentor*) *seniculus* Humb., Rec. Obs. Zool., I, 1811, (1815), p. 354.

Simia (*Stentor*) *stramineus* Humb., Rec. Obs. Zool., I, 1811, (1815), p. 355.

Stentor seniculus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 108; *Id.* Cours Hist. Nat. Mamm., 1828, p. 21, 9me Leçon.

Stentor stramineus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 168.

Mycetes stramineus Kuhl, Beitr. Zool., 1820, p. 29; Desm., Mamm., 1820, p. 78; Spix, Simiar. et Vespert. Bras., 1823, p. 35, pl.

XXXI; Reichenb., Vollständ. Naturg. Affen, 1862, p. 67, figs. 170, 171; Bates, Nat. Riv. Amaz., I, 1863, p. 294.

Stentor chrysurus I. Geoff., Mem. Mus. Hist. Nat. Paris, XVII, 1829, p. 166.

Mycetes auratus Gray, Ann. Mag. Nat. Hist, XVI, 1845. p. 220; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 40.

Mycetes laniger Gray, Ann. Mag. Nat. Hist., XVI, 1845, p. 219; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 40.

Mycetes chrysurus I. Geoff., Cat. Primates, 1851, p. 52; Casteln., Expéd. Amér. Sud, Mamm., I, 1855, p. 4; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 175; Reichenb., Vollständ. Naturg. Affen, 1862, p. 65, fig. 158.

Alouatta seniculus rubicunda Allen, Bull. Amer. Mus. Nat. Hist., N. Y., 1904, p. 458.

Alouatta seniculus caucensis Allen, Bull. Amer. Mus. Nat. Hist., N. Y., 1904, p. 462.

RED HOWLER.

Type locality. Cartagena, Colombia.

Geogr. Distr. Colombia, and forest between the Rio Negro and Solimoens, (Spix); Rio Madeira, (Bates); Brazil.

Genl. Char. Middle of back lighter than rest of back and limbs, and varying from straw color to golden; mammæ placed occasionally in the axillæ.

Color. Variations in color exist among individuals of this species apparently quite independent of age, sex, or locality, the head, limbs and tail varying from brownish and coppery red to a dark purplish red, sometimes almost a blackish purplish red, and the tail from ferruginous to dark purplish red; the back is straw color, always lighter than the head; limbs and upper part of the back chestnut brown; hands and feet are always the same color as the limbs, and the under parts are but sparsely covered, chiefly on the abdomen, with purplish red hair. Young like the parents.

The type of *Mycetes chrysurus* I. Geoffroy, in Paris Museum is undoubtedly this species.

Measurements. Skull: occipito-nasal length, 98; Hensel, 100; zygomatic width, 79; intertemporal width, 46; median length of nasals, 22; length of upper molar series, 34; length of mandible, 95; length of lower molar series, 41. Verteb., Cerv. 7, Dor. 14, L. 5, S. 3, Caud. 27.

I have examined the series of specimens in the American Museum of Natural History in New York, from Colombia, including the types which Dr. Allen has separated from A. SENICULUS, as *A. s. rubicunda* and *A. s. caucensis,* and am unable to find characters in my opinion sufficient to cause them to be elevated to a distinct rank. In the table of measurements given at the end of his paper, sixteen specimens of *A. s. rubicunda* and eight, only half as many, of *A. s. caucensis* have been selected. This has been done by Dr. Allen, not from his own volition, but because he did not have sufficient material from the Cauca Valley to enable him to equalize the two series in the number of examples apportioned to each. These subspecies were established upon cranial characters chiefly, although the color of the specimens was not disregarded. As to the latter I find that Cauca Valley specimens have practically perfect representatives from Bonda, Santa Marta district, and Dr. Allen speaks of the "great local variation abundantly shown by a fine series of nine specimens from the Upper Cauca Valley collected at altitudes of from 3,000 to 6,000 feet" and of the *A. s. rubicunda* he states, this large series (examples), "shows a wide range of variations in color, which proves to be entirely independent of sex or age and largely independent of season." This agrees with my own experience of A. SENICULUS with the large series of these animals examined in the collections of the various European Museums. More or less slight variations in depths of shades, seen in specimens from the same or contiguous localities cannot therefore be relied upon as a character for establishing a race for this species, and I have shown in my remarks on the crania that the skulls, even of specimens from the same locality, vary in an almost incredible degree. Dr. Allen in his paper has given figures of the skulls of his two subspecies, which, if taken by themselves would seem to show that he had ample grounds for giving them distinctive rank, but on examining these crania, the differences exhibited, either disappear or are shown not to be confined exclusively to either form. At first sight of the figures exhibiting the under side of the skull, one is struck by the curvature of the tooth rows in the cranium of *A. s. rubicunda,* a feature not found in any individual of the A. SENICULUS type. On examining this skull it was seen that the last molar was abnormally placed, was out of its proper position, the one on the left side, (right side of the figure), was situated farther inward than the corresponding tooth on the opposite side, which was only slightly out of position, and this accounted for the curvature seen in the figure. The other skulls from the same locality had the tooth row perfectly straight as exhibited by the figure of the

Cauca Valley skull. In selecting his type Dr. Allen had quite overlooked the abnormal position of these last molars. The other cranial characters mentioned by Dr. Allen are mainly individual variations which are readily perceived in any considerable series of skulls of this species, but which, as I have already said, if judged by themselves without ample material for comparison might be considered as having specific or racial value. Any form, however, established upon these variations would create confusion and prove a stumbling block to all investigators.

In the table of measurements given by Dr. Allen in his paper, the *average* of the Cauca Valley specimens, shows their skulls to be slightly smaller, but if as many of them had been available as of the other series from Santa Marta, sixteen instead of eight, the probability would be, if the individuals were of a similar age, that the average would show little if any difference between the crania from the two localities.

As Linnæus' type came from Cartagena, these specimens from Colombia would undoubtedly represent the typical style of the species.

The specimen named and figured by Spix as *Mycetes stramineus* is in the Munich Museum. It is in poor condition, so changed by the accumulation of nearly a century's dust that its original color is indistinguishable. It seems to have been of a general uniform color, now pale straw yellow where a few spots of that color can be detected in various parts. The limbs and tail would appear to have been about the same color as the body; the beard and sides of face alone being a dark brownish. Spix gives the locality of this example as the forest between the Rio Negro and the Solimoens River near the boundaries of Peru. There is only one specimen in the Museum. This forest also extends on the eastern border of Colombia, and it is not improbable that A. SENICULUS is found there, ranging also to the borders of Peru.

Bates, (l. c.) speaks of a Howler from the Madeira River, which he attributes to the *Mycetes stramineus* Geoff., but which is possibly the A. SENICULUS Humb., as follows: "The only interesting mammalian animal which I saw at Villa Nova was a monkey of a species new to me; it was not however a native of the district, having been brought by a trader from the river Madeira, a few miles above Borda. It was a howler, probably the *Mycetes stramineus* Geoffroy St. Hilaire. The howlers are the only kinds of Monkey which the natives have not succeeded in taming. They are often caught but they do not survive captivity many weeks. The one of which I am speaking was not quite full grown. It measured sixteen inches in length, exclusive of the tail; the whole body was covered with rather long and shining dingy white (?) hair, the whiskers and beard only being of a tawny hue. It was kept in a house, together with a Coaita and a Cairára monkey (CEBUS ALBIFRONS). Both these lively members of the monkey order seemed rather to court attention, but the *Mycetes* shrunk away when any one approached. When it first arrived, it occasionally made a gruff, subdued howling noise early in the morning. The deep volume of sound in the voice of the howling monkeys, as is well known, is produced by a drum-shaped expansion in the larynx. It was curious to watch the animal while venting its hollow cavernous roar, and observe how small was the muscular exertion employed. When howlers are seen in the forest there are generally three or four of them mounted on the topmost branches of a tree. It does not appear that their harrowing roar is emitted from sudden alarm; at least, it was not so in captive individuals. It is probable, however, that the noise seems to intimidate their enemies. I did not meet with the *Mycetes stramineus* in any other part of the Amazonian region. * * * On the Upper Amazons the sole species seen was the *Mycetes ursinus* whose fur is of a shining yellowish red color." This is doubtless M. SENICULUS.

ALOUATTA MACCONNELLI Elliot.

Alouatta macconnelli Elliot, Ann. Mag. Nat. Hist., V, 8th Ser., 1910, p. 80; Allen, Bull. Am. Mus. Nat. Hist., N. Y., XXX, 1911, p. 271.

MACCONNELL'S HOWLER.

Type locality. Coast of Demerara. *Type in British Museum.

Geogr. Distr. English and French Guiana, Cayenne to coast north of the Amazon. El Llagual, El Hacha, Paramo de Rosas, Venezuela, (Carriker).

Genl. Char. Upper parts unicolor from head, in adults. Under parts and flanks orange red.

Color. Head all around rich maroon red, entire upper parts golden yellow, tips of hairs in certain lights fiery golden, base of hairs black; arms to elbows, under parts, and forearms deep orange red; hands, legs below knees, feet and tail maroon red growing paler to tip. Ex type British Museum.

Measurements. Size same as A. SENICULUS. Skull: occipital region wanting; intertemporal width, 44.5; palatal length, 46.8; zygomatic width, about 86.8; median length of nasals, 21.3; length of upper molar series, 38.1; length of mandible, 107.7; length of lower molar series, 42.2; adult ♂. Ex type British Museum.

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*The type lacks hands and feet; the coloring of these was taken from another example.

This form differs from A. SENICULUS in not having the dark hue on the upper part of the back, limbs, hands, feet and tail. The upper parts and flanks in the adults are a rich golden hue from the nape to the tail, and the under parts and limbs a beautiful orange red, quite different from the typical style on the north western part of the continent. Allen (l. c.) gives the following account of this species from Carriker's notes:

"The three specimens from northern Venezuela do not differ appreciably in color or otherwise from four others from El Llagual and Rio Mocho. There is a noteworthy sexual difference in color, the males being much more intensely colored throughout than the females.

"Common on the Caura and on the Cuyuni, and in less numbers most everywhere from sea level up to 4,000 feet (La Cumbre de Valencia), where heavy forest is found. Its presence is always quickly revealed in a locality by its tremendous roaring, which is really quite awe-inspiring. They are sluggish, morose brutes, impossible to tame, and are more often found in pairs or families than in troops. They will sit curled up for hours in the top of some giant tree, and as long as they believe themselves unseen, will not move, but even when disturbed, never move with the speed or agility of *Cebus* or *Ateles* (!)

"I have found them to be much troubled with 'screw worms,' especially around the neck. Other species seem to be able to remove them, as a rule. They are very tenacious of life, clinging to a branch after being riddled with shot, and even after death, only dropping after rigor mortis has passed and released the contracted muscles. They invariably howl at the first break of day and usually before a rain-storm. They are invariably very lean of body, being in that respect different from the other species, which at times are found exceedingly fat."

ALOUATTA INSULANUS Elliot.

Alouatta insulanus Elliot, Ann. Mag. Nat. Hist., V, 8th Ser., 1910, p. 79.

TRINIDAD HOWLER.

Type locality. Island of Trinidad. Type in British Museum.

Genl. Char. Size small, color nearly uniform throughout, limbs only slightly darker than the body.

Color. Head and whiskers maroon, darkest on chin and throat; upper part of body and flanks red, in certain lights with a golden lustre; limbs, hands and feet, bright red with a maroon tinge on forearms; tail at root bright maroon grading into golden and growing paler at the tip. Ex type British Museum.

Measurements. Total length, 1,120; tail, 600; foot, 105; no skull.

This red Howler in general appearance resembles somewhat the form from the Juara River in the western portion of South America, but is considerably smaller in size, has not so much of the golden color of the body, and the limbs and tail are much paler, more the hue of the body. It is even more entitled to the name of Red Howler than is the A. JUARA.

ALOUATTA JUARA Elliot.

Alouatta juara Elliot, Ann. Mag. Nat. Hist., V, 8th Ser., 1910, p. 80.

GOLDEN HOWLER.

Type locality. Rio Juara, Upper Amazon. Type in British Museum.

Genl. Char. General color golden red; arms and legs darker.

Color. Head and whiskers bright maroon, darkest under chin; upper part of body and flanks golden red; arms and legs, hands and feet, maroon darker than body; under parts and inner side of limbs red; tail maroon at base grading into golden red similar to body. Ex type British Museum.

Measurements. Total length, 1,145; tail, 625; foot, 130. Skull: total length, 126.3; occipito-nasal length, 104.9; intertemporal width, 40.2; breadth of braincase, 54.5; Hensel, 106.2; zygomatic width, 81.4; median length of nasals, 25.9; palatal length, 44.3; length of upper molar series, 35.8; length of mandible, 94.8; length of lower molar series, 42.9. Ex type British Museum.

The peculiarity of this species is its general red color, the bright maroon of the head grading into the golden red of the body without any marked line to separate the hues. Its general aspect is that of a red monkey with dark limbs. The basal half of the tail is maroon, darker than the head, more nearly the color of the thighs, the remainder much lighter. Two specimens are in the British Museum procured on the Rio Juara, Upper Amazon.

ALOUATTA SARA Elliot.

Alouatta sara Elliot, Ann. Mag. Nat. Hist., V, 8th Ser., 1910, p. 81.

BOLIVIAN HOWLER.

Type locality. Province of Sara, Bolivia. Type in British Museum.

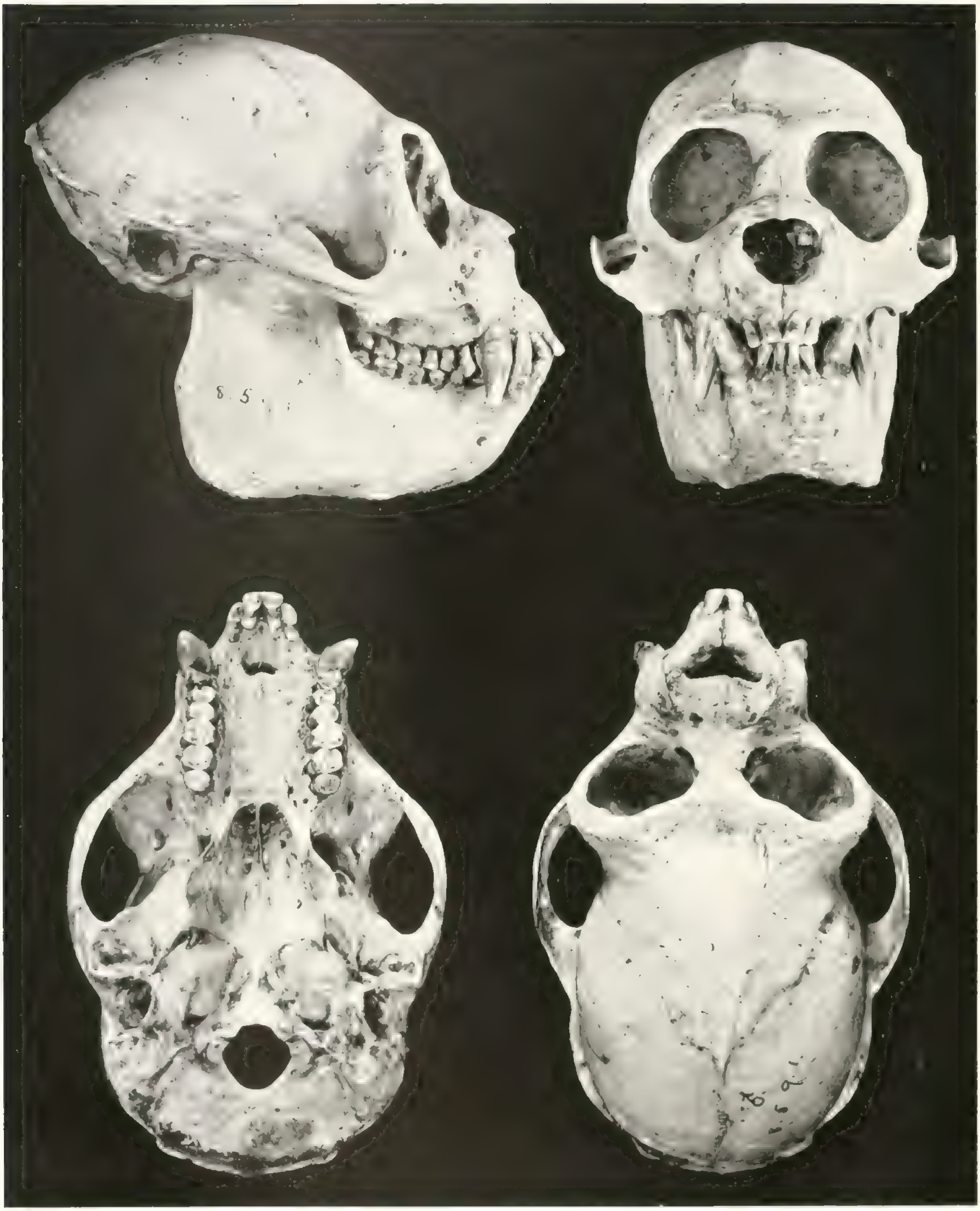
Genl. Char. Color of body uniform, limbs only slightly darker; under parts yellowish not orange red as in the Guiana monkey. Black band around face to beneath chin.

Color. Head very dark maroon, band across forehead down sides of head in front of ears, meeting beneath chin, black; upper parts of body and flanks and arms to elbows pale golden orange, darkest on dorsal line, base of hairs black; forearms and legs, hands, feet and tail above, orange red, paler than sides of head; hairs on under parts nearly gone but apparently yellowish with a red tinge; the hairs of flanks along abdomen yellowish red not at all like the orange red of the Guiana example; under side of thigh yellowish red, and tail beneath pale red. Ex type British Museum.

Measurements. Total length, 1,125; tail, 590; foot, 130; ear, 40, (Collector). Skull: total length, 110.4; occipito-nasal length, 92; intertemporal width, 43; Hensel, 89.6; zygomatic width, 68.2; length of nasals, 17.4; palatal length, 35.5; length of upper molar series, 32; length of mandible, 81.2; length of lower molar series, 38.2. Ex type British Museum.

The above described example from Bolivia is a female, and therefore there can be no comparison between it and that of the one from Guiana which is an old male. The coloring of the upper part of the body in the two animals is not unlike when they are brought under the same light, but beneath, along the flanks, the Bolivian animal has none of the rich orange red characteristic of the eastern species, but is yellowish red on this part.

Two examples from the Province of Sara are in the British Museum, one of which is young.



PITHECIA MONACHA.

No. 8.5.9.1. Brit. Mus. Coll. Nat. Size.

Subfamily 3. Pithecinæ.

GENUS PITHECIA. SAKIS.

$$\text{I. } \frac{2-2}{2-2};\quad \text{C. } \frac{1-1}{1-1};\quad \text{P. } \frac{3-3}{3-3};\quad \text{M. } \frac{3-3}{3-3} = 36.$$

PITHECIA Desm., Nouv. Dict. Hist. Nat., XXIV, 1804, p. 8. Type *Simia pithecia* Linnæus.
Yarkea Less., Spec. Mamm., 1840, p. 176.
Chiropotes Less., Spec. Mamm., 1840, p. 178.

Hair long, thick, divided by a central line on the head, and falling down partly covering the face; thick beard on the chin; ears large; tail long, thick, bushy, non-prehensile. Incisors of both jaws project forwards, the inner pair larger than the outer which are very small; canines long, conical; first premolar the smallest and with only one cusp; molars with grooved crowns, and four cusps.

The members of this genus are peculiar in having the body usually covered by long, coarse hairs. The tail, which is longer or as long as the body, is also covered with a similar coarse hair, being in certain species quite bushy. Another peculiarity is the thrust forward of the incisors both of the upper and lower jaws. In the brain the cerebellum and olfactory lobes are covered by the cerebrum, and the ribs are broad and consist of twelve pairs except P. PITHECIA which has thirteen.

They are timid and very delicate creatures, usually surviving but a brief period in captivity, and become much attached to whoever cares for them.

These monkeys are found in the Guianas, the forests of the Orinoco and its tributaries, and the valley of the Amazon, extending their range westward into Ecuador and Peru. Eight species are here recognized.

LITERATURE OF THE SPECIES.

1766. *Linnæus, Systema Naturæ.*
PITHECIA PITHECIA first described as *Simia pithecia.*

1777. *Erxleben, Systema Regni Animalis.*
In this work under the genus CALLITHRIX various species are

ranged, none of which are now included in it. *Callithrix pithecia* for Pithecia pithecia is the first one given.

1807. *Hoffmannsegg, in Magasin für die neuesten Entdeckungen in der gesammten Naturkunde.*
Pithecia satanas as *Cebus satanas* first described.

1811. *Humboldt et Bonpland, Recueil d'Observations de Zoologie et d'Anatomie Comparée.*
In the subdivision *Pithecia,* all the species are retained in *Simia.* Pithecia chiropotes first described as *Simia chiropotes.* Other species given are (*S.*) satanas; (*S.*) *rufiventer* = P. pithecia; (*S.*) monachus first described; (*S.*) *azaræ* = Aotus miriquouinus; (*S.*) *leucocephalus* var. C. P. monachus; 2d subgenus *Yarkea,* with (*Y.*) *leucocephala* = P. pithecia middle age! *P. hirsuta* Spix, young, and *P. inusta* = P. monachus; 3d subgenus *Chiropotes,* with (*C.*) *cuxio* = P. satanas; var. *A.* (C.) chiropotes; var. B. *P. sagulato* = P. chiropotes. The discrimination shown of the specific values is not great, and the arrangement confusing and unnecessarily complicated.

1842. *J. E. Gray, in Annals and Magazine of Natural History.*
Pithecia pithecia redescribed as *P. pogonias.*

1844. *J. E. Gray, in Zoology of the Voyage of the Sulphur. Mammalia.*
Pithecia monacha redescribed as *P. irrorata; P. pogonias,* and *P. leucocephala* both = P. pithecia.

1848. *I. Geoffroy Saint-Hilaire, in Comptes Rendus de l'Académie des Sciences, Paris.*
Pithecia albinasa first described.

1850. *I. Geoffroy Saint-Hilaire, in Comptes Rendus de l'Académie des Sciences, Paris.*
Pithecia chrysocephala first described.

1851. *I. Geoffroy Saint-Hilaire, Catalogue des Primates.*
Six species of Pithecia are here given. They are *P. leucocephala* = P. pithecia; P. chrysocephala; *P. rufiventer* = P. pithecia; P. monachus; P. albinasa; and P. satanas.

1855. *Wagner, Schreber, Die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*
Seven species are here recognized but only three belong to the genus Pithecia. *P. leucocephala* with B. *P. rufiventer* = P. pithecia; P. albinasa; P. satanas; P. chiropotes. The other species mentioned belong to the genus Cacajao.

1860. *J. E. Gray, in Proceedings of the Zoological Society of London.* Four species are here given. P. CHRYSOCEPHALA; P. MONACHA, with *P. irrorata* Gray, as a synonym; *P. rufiventer* = P. PITHECIA, with *P. pogonias* Gray, as a synonym; and P. ALBICANS described for the first time. Two others are mentioned as apparently distinct, *P. leucocephala* Geoff., = P. PITHECIA; and P. ALBINASA. These had not been seen by this Author.

1862. *Reichenbach, Die Vollständigste Naturgeschichte der Affen.* In this work the species of PITHECIA are divided between that genus and *Yarkea* as follows: *P. rufiventer* = P. PITHECIA; P. CAPILLIMENTOSA; P. CHRYSOCEPHALUS; (*Y.*) *leucocephala* = P. PITHECIA; (*Y.*) *ochrocephala* = P. CHRYSOCEPHALA; (*Y.*) *inusta* = P. PITHECIA; and (*Y.*) *irrorata* = P. PITHECIA; *B. israelita* Gray = P. CHIROPOTES as does also *C. sagulata* Gray.

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in British Museum.*
The species of PITHECIA are here divided into two Tribes, *Pithecina* and *Brachyurina.* The first contains the genus PITHECIA with four species, viz.: P. ALBICANS; *P. rufiventer* = P. PITHECIA; *P. leucocephala* = P. PITHECIA; and P. MONACHA. *Brachyurina* has two genera *Chiropotes,* with (*C.*) SATANAS; (*C.*) *sagulata* = P. CHIROPOTES; (*C.*) *ater* = P. SATANAS; and (*C.*) ALBINASA. The second genus *Ouakaria* has three species, all of which are now included in the genus CACAJAO.

1876. *Schlegel, Muséum d'Histoire Naturelle des Pays-Bas, Simiæ.* In this work nine species are placed in the genus PITHECIA, viz., *P. nocturna* = P. CHRYSOCEPHALA Geoff., which is considered a variation from the typical style. *Simia* PITHECIA Linn., is given among the synonyms, but, although it has a prior claim, is not adopted as the name of the species. P. MONACHA; P. ALBINASA; P. CHIROPOTES; P. SATANAS; *P. melanocephala, P. calva, P. rubicunda* and *P. alba,* the last four not belonging to PITHECIA, but now contained in the genus CACAJAO, but *P. alba* is a supposititious species no example having ever been procured.

1883. *A. von Pelzeln, Brasilische Säugethiere, Resultate von Johann Natterer's Reisen in der Jahren* 1817 *bis* 1835.
Five species of PITHECIA are here recorded as follows: *P. leucocephala* Audeb., = P. PITHECIA Linn.; P. CHRYSOCEPHALA; *P. hirsuta* = P. MONACHA; P. CHIROPOTES; and P. SATANAS.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

On the northeastern corner of South America in French Guiana, two species of this genus are found, one P. CAPILLIMENTOSA not having been, as yet, procured elsewhere; the other P. PITHECIA with a wider known range, being a resident of British Guiana for 300 miles into the interior, (Sclater, Proc. Zool. Soc. Lond., 1866, p. 305); and Guiana possesses two additional species, P. SATANAS and P. CHIROPOTES, ranging on the Upper Orinoco, Rio Tocantins and Rio Negro; the first named having been obtained at Para; the latter also on the Rio Branco, Brazil, and, according to Bates, it goes to Peru. On the Upper Amazon near Ega on the Solimoens P. ALBICANS was procured, its range unknown; and on the banks of the Rio Negro near Barra P. CHRYSOCEPHALA occurs. At or near Santarem on the Lower Amazon P. ALBINASA was found. The most extensive known range of any of the species is that of P. MONACHA, which occurs on both banks of the Upper Amazon, on the Rio Negro, Rio Madeira and Rio Marmoré, in the vicinity of Tabatinga on the Rio Solimoens, and into Peru, where it has been procured on the Rio Javari and Rio Ucayali. The species has also been obtained on the Rio Marona in Western Ecuador.

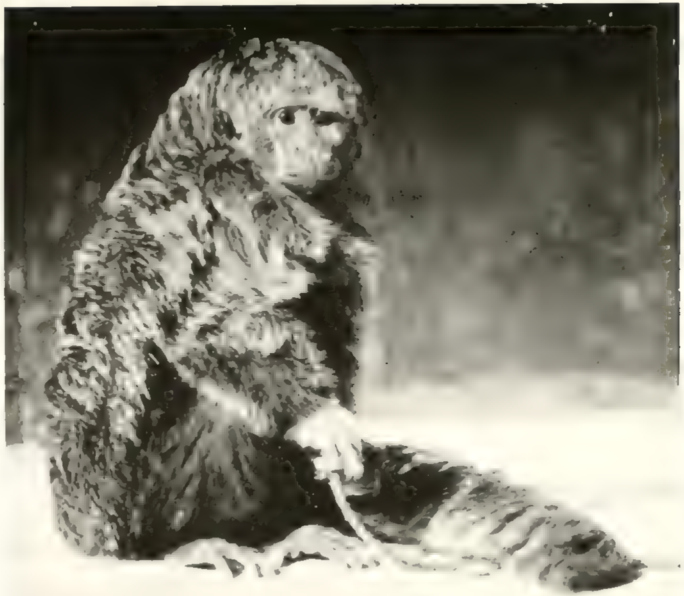
KEY TO THE SPECIES.

A. Size large.
- *a.* Hair of head long, projecting forward on face.
  - *a.'* Color black, hairs tipped with white, hands and feet grayish white .... *P. monacha.*
  - *b.'* Color clove brown, some hairs white tipped, hands and feet black............... *P. capillimentosa.*
  - *c.'* Back and tail only black, rest whitish........ *P. albicans.*
- *b.* Hair of head short, not projecting on face.
  - *a.'* Head white .... *P. pithecia.*
  - *b.'* Head ochraceous buff .... *P. chrysocephalus.*
  - *c.'* Head black, nose scarlet, tip black.......... *P. albinasa.*

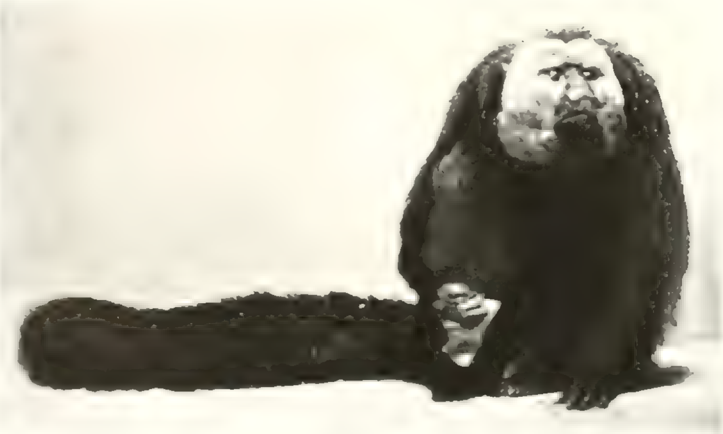
B. Size small.
- *a.* Back black, washed with brown .... *P. satanas.*
- *b.* Back golden brown .... *P. chiropotes.*

PITHECIA MONACHA E. Geoffroy.

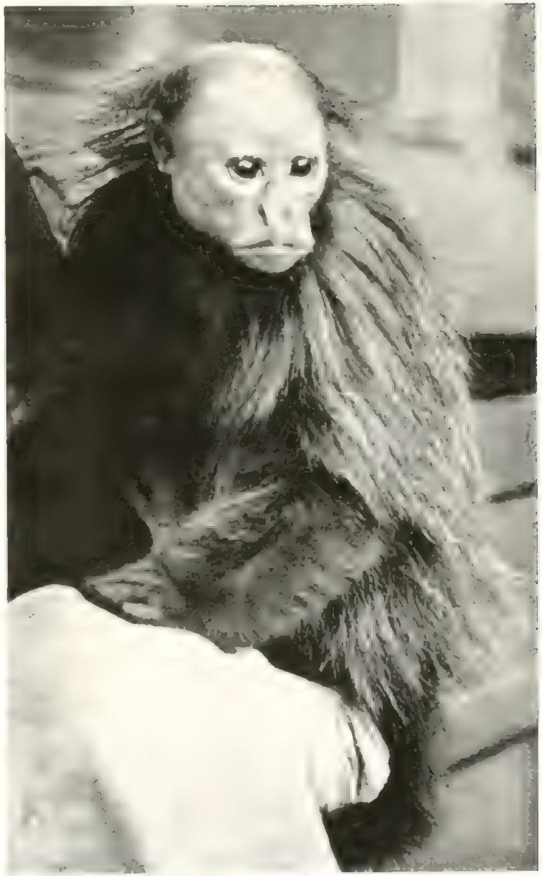
Pithecia monachus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 116; *Id.* Cours Hist. Nat. Mamm., 1828, p. 24, 10me



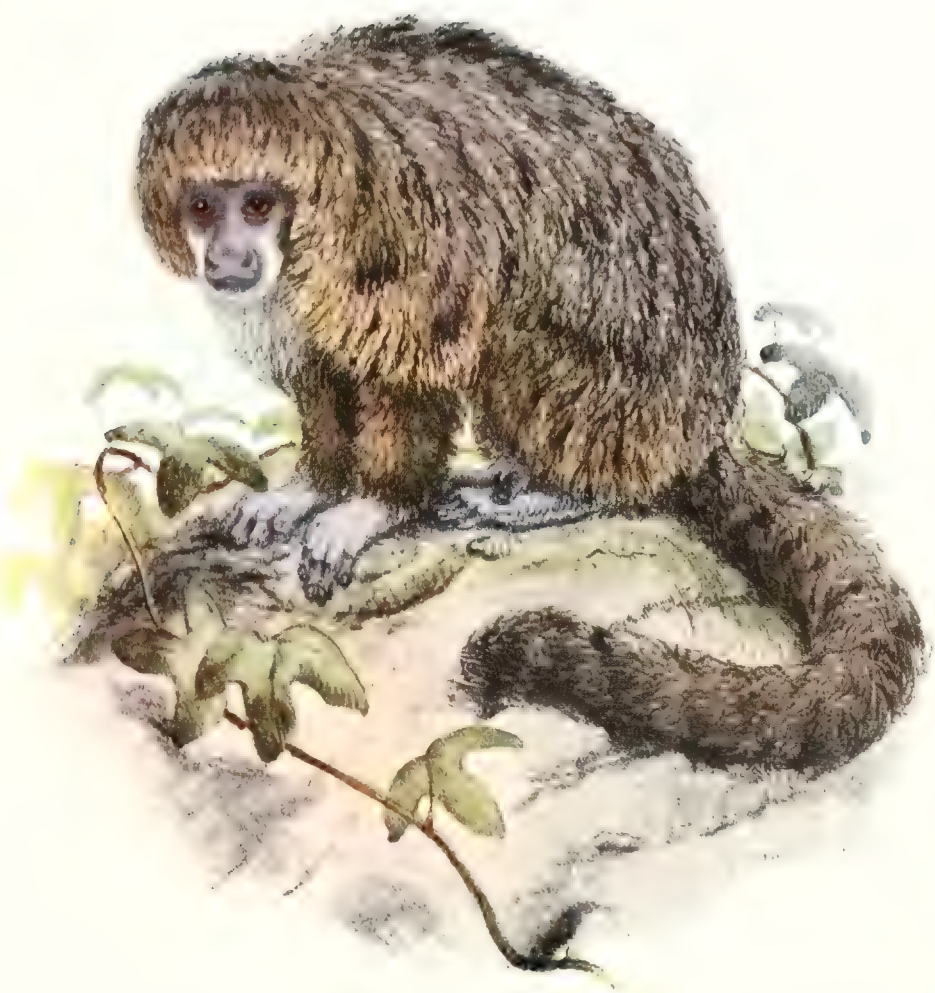
Pithecia monachus



Pithecia pithecia.



Cacajao rubicundus



PITHECIA MONACHA

Leçon; I. Geoff., Cat. Primates, 1851, p. 55; Casteln., Expéd. Amér. Sud, 1855, p. 17, pl. III; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, pp. 178, 179; Gray, Proc. Zool. Soc. Lond., 1860, p. 230; 1872, p. 664; Flow., Proc. Zool. Soc. Lond., 1862, p. 326, pl. XXXVII; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 59; Forbes, Handb. Primates, I, 1894, p. 182.

Simia (*Pithecia*) *monacha* Humb., Recueil Observ. Zool., 1811, (1815), p. 359.

Pithecia hirsuta Spix, Sim. et Vespert. Bras., 1823, p. 14, pl. IX; Less., Spec. Mamm., 1840, p. 178; Bates, Nat. Riv. Amaz., 1868, p. 314; von Pelz., Zool.-Bot. Ges. Wien, 1883, Beiheft.

Pithecia inusta Spix, Sim. et Vespert. Bras., 1823, p. 15, pl. X; Less., Spec. Mamm., 1840, p. 179; Gray, Proc. Zool. Soc. Lond., 1860, p. 229.

Pithecia irrorata Gray, Voy. Sulphur, Zool., 1844, p. 14, pl. III; Wallace, Proc. Zool. Soc. Lond., 1852, p. 108.

Yarkea hirsuta Reichenb., Vollständ. Naturg. Affen, 1862, p. 27, figs. 78, 79.

Yarkea inusta Reichenb., Vollständ. Naturg. Affen, 1862, p. 27, fig. 72.

Yarkea monacha Reichenb., Vollständ. Naturg. Affen, 1862, p. 28, fig. 80.

Yarkea irrorata Reichenb., Vollständ. Naturg. Affen, 1862, p. 29, fig. 82.

Pithecia monacha Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 220.

HAIRY SAKI.

Type locality. "Probablement le Brésil."

Geogr. Distr. North bank of the Upper Amazon from Tonantins extending into Peru. South bank of the Upper Amazon, (Wallace); Macas, Ecuador, (Buckley); Cidade do Matto Grosso, Rio Marmoré; Destacommento do Ribeiro am Madeira; Barra do Rio Negro, Brazil, (Natterer).

Genl. Char. Hairs long, harsh, loosely set, directed forward about the head forming a hood; face bare, or covered with short hairs; nostrils lateral, separated rather widely; ears, large, round, naked.

Color. Male. Face and ears purplish brown; face sometimes covered with short white hairs; head covered with short hairs, white from above eyes to crown; black and white on crown and sides, extending on to the throat; lips covered with short white hairs; upper parts of body, limbs and tail black, the hairs tipped with yellowish white, becoming brownish on rump; throat and breast ochraceous buff; rest of under parts purplish prune or purplish black; hands and feet yellowish white; inner sides of arms and legs black.

Female. Face bare, dark purplish brown, nose almost black, around eyes paler, and sparingly covered with short white hairs; top and back of head, neck, shoulders, back, thighs and tail black washed with yellowish white; rump, pale yellowish brown, base of hairs brownish black; forearm black, hairs white tipped; hands and feet white; tail black, hairs with pale brown tips; throat, breast, belly and inside of thighs pale brown; nails black. Flower's description of ♀.

Measurements. Total length about 880; tail, 508. Skull: occipitonasal length, 80; zygomatic width, 62; intertemporal width, 38; palatal length, 27; breadth of braincase, 47; median length of nasals, 17; length of upper molar series, 18; length of mandible, 59; length of lower molar series, 22.

The type of *Pithecia inusta* Spix, is in the Munich Museum and can in no way be separated from P. MONACHA. It is a full grown animal in good condition and came from the forests of the Tonantins, an affluent of the Solimoens River, near Tabatinga.

Bates, writing about this monkey under the name of Paranaçu (l. c.) states that it is a timid, inoffensive creature, and is found on the "terra firma" lands of the north shore of the Solimoens from Tonantins to Peru. It is a very delicate animal rarely living in captivity for any length of time, but if one succeeds in keeping it alive for any considerable period, it makes a very affectionate pet. While the Cebi exceed all the American monkeys in intelligence, the Coaita, (ATELEUS PANISCUS) has the most gentle and affectionate disposition, but the Paranaçu although a dull, cheerless animal exceeds all in its capability of attachment to man. It is not lacking in intelligence, as the following incident shows. A neighbor had gone out in the morning leaving his pet behind, and the monkey missing its friend decided it would come to Mr. Bates as was its habit, and so the Paranaçu took a short cut over gardens, trees and thickets, as a neighbor saw it on its way, and came directly to Mr. Bates' dwelling. Not finding its master there, it climbed on to a table and sat down, and with an air of quiet resignation waited for him. Soon after its owner entered and his pet jumped at once to its usual perch on his shoulder.

PITHECIA CAPILLIMENTOSA Spix.

Pithecia capillimentosa Spix, Sim. et Vespert. Bras., 1823, XVI, pl. XI; Gray, Proc. Zool. Soc. Lond., 1860, p. 229; Reichenb., Vollständ. Naturg. Affen, 1862, p. 25, fig. 73.

Pithecia rufiventer (nec Geoff.), Wagn., Schreb., Säugth. Suppl., I, 1840, p. 222, (desc. nec Syn.).

Type locality. Cayenne. Type in Munich Museum.

Genl. Char. Hair very long and loose on hinder part of head, and inclined to stand erect. Face covered with short hairs.

Color. Forepart of head and sides yellowish white, the hairs being black at base with yellowish white tips; upper parts of body and flanks clove brown, the long hairs falling over the shoulders, and on arms above elbows tipped with yellowish white; forearms, hands and feet jet black; throat, breast and abdomen buff, rest of under parts to vent clove brown; tail very bushy, clove brown.

Measurements. Total length, 475; tail, 220; foot, 90. Skull in specimen. Ex type Munich Museum.

The type is a young animal, perhaps half grown, and has generally been considered the same as PITHECIA PITHECIA (Linn.). It is, however, much nearer P. MONACHA (Humboldt), but differs from that species in its jet black hands and feet, and in having the buff on the under parts extending to the lower part of the abdomen. Compared with a young P. MONACHA of about the same size and probably age, it differs in the much longer hairs on the head and neck rising, as Spix states, like a wig, (but not shown in his plate), in the much greater extent of the buff color on the under parts, and strikingly in the totally different color of the hands and feet, as there is no indication whatever of the grayish or yellowish white hue which makes the hands and feet of P. MONACHA so conspicuous a feature of that species. There seems to be no alternative but to consider Spix's type as representing a distinct form. Like so many of Spix's figures, the one given of this type does not represent the animal either in color or in the length and peculiar disposition of the hairs. Spix did not collect this specimen, but found it in the collection of the Munich Museum, and it was in the register of 1816 as having come from Cayenne. This is on one of the tickets now attached to the type. Of course this was before Spix made his journey to Brazil. He does not say in his work what the locality of his type was, but merely gives a description of the animal and a figure.

PITHECIA ALBICANS Gray.

Pithecia albicans Gray, Proc. Zool. Soc. Lond., 1860, p. 231, pl. LXXXI; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Museum, 1870, p. 59; Bates, Nat. Riv. Amaz., II, 1863. p. 314; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 216.

Yarkea albicans Reichenb., Vollständ. Naturg. Affen, 1862, p. 27, no fig.

WHITISH SAKI.

Type locality. Lake Teffé, near Éga, on the Solimoens River, Brazil. Type in British Museum.

Geogr. Distr. Tonantins to Peru, on the Solimoens River, Brazil.

Genl. Char. Size large. Hair long and loose hanging down the sides to knees and elbows; tail long, bushy; hair on back of head leaning forward, forming a hood as in P. MONACHA.

Color. Face covered with short white hairs; head, shoulders, sides of body, limbs, hands and feet whitish; back, upper part of sides and tail black, the hairs with whitish tips; under parts russet; hands and feet whitish or grayish. Ex type in British Museum.

Measurements. About the size of P. MONACHA.

The type and paratypes of this form described by Gray are in the British Museum Collection, and seem entitled to be regarded as distinct. They differ in color from all other Pitheciæ. The adult does not agree with Gray's description for the shoulders and arms are not black, but whitish, the black of the back only covering the back between the shoulders, and there is no black whatever on the arms. The 'whitish' of Gray's description has now become a pale, dirty, yellowish brown, probably giving a very incorrect idea of the animal's appearance in life. The hairs on hands and feet are quite short, the long hairs not going beyond the wrists and ankles. The long hair of the head comes forward to the face as in P. MONACHA, but the texture is quite different from the hair of that species, being not harsh and straight but having an inclination to curl.

Bates, to whose book I have so often referred, says, (l. c.) that this monkey is found on the banks of the Teffé south of the Solimoens. An individual, since placed in the British Museum, was a pet of a young Frenchman at Éga. It was so tame that it followed him like a dog about the streets. Its owner was a tailor, and the monkey passed most of the day on his shoulder while he was at work. It was not friendly, however, to any other person.

Pithecia pithecia (Linnæus).

Simia pithecia Linn., Syst. Nat., I, 1766, p. 40; Bodd., Elench. Anim., 1784, p. 63; Gmel., Syst. Nat., I, 1788, p. 39.

Simia leucocephala Audeb., Hist. Nat. Singes et Makis, Fam. VI, Sec. I, 1797, p. 9, fig. 2.

Pithecia nocturna Illig., Abhandl. Königl. Akad. Berlin, 1804-1811, p. 107; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 217, (Part.); Anders., Cat. Mamm. Ind. Mus. Calc., 1881, p. 86.

Simia (*Pithecia*) *leucocephala* Humb., Obs. Zool., I, 1811, (1815), p. 359.

Simia (*Pithecia*) *rufiventer* Humb., Obs. Zool., I, 1811, (1815), p. 358.

Pithecia leucocephala E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 117; *Id.* Cours Hist. Nat. Mamm., 1828, p. 24, 10me Leçon; Kuhl, Beitr. Zool., 1820, p. 45; Gray, List Spec. Mamm. Brit. Mus., 1843, p. 3; *Id.* Voy. Sulphur, 1844, p. 12, pl. II; I. Geoff., Cat. Primates, 1851, p. 54; Dahlb., Stud. Zool. Reg. Fam. Anim. Natur., fasc. I, 1856, pp. 177, 178; Gray, Proc. Zool. Soc. Lond., 1860, p. 231; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 57; Sclat., Proc. Zool. Soc. Lond., 1871, p. 228.

Pithecia rufiventer E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 116; *Id.* Cours Hist. Nat. Mamm., 1828, p. 18, 10me Leçon; Less., Spec. Mamm., 1840, p. 175; Wagn., Abhandl. Akad. Münch., V, 1848, Pt. II, p. 436, ♀; I. Geoff., Cat. Primates, 1851, p. 55, ♀; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, pp. 178, 179; Gray, Proc. Zool. Soc. Lond., 1860, p. 230; *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 60.

Yarkea leucocephala Less., Spec. Mamm., 1840 p. 177; Reichenb., Vollständ. Naturg. Affen, 1862, p. 26, figs. 75, 76.

Pithecia pogonias Gray, Voy. Sulphur, 1844, p. 13, pl. II, ♀.

Yarkea rufiventer Reichenb., Vollständ. Naturg. Affen, 1862, p. 26, figs. 71, 72.

Yarkea pogonias Reichenb., Vollständ. Naturg. Affen, 1862, p. 29, fig. 81.

Pithecia pithecia Forbes, Handb. Primates, I, 1894, p. 185; Elliot, Cat. Mamm. Field Columb. Mus., VIII. F. C. M. Pub., 1906, p. 556, fig. LXXXII, Zool. Ser.

WHITE-HEADED SAKI.

Type locality. Guiana.

Geogr. Distr. Interior of Demerara, French Guiana; British Guiana; and the region of the Rio Negro and Rio Branco, Brazil.

Genl. Char. Hair very long both on body and tail; sexes differently colored.

Color. Male. Head grayish white, becoming yellowish on sides and tawny ochraceous about the lips and throat; face naked, black, and a narrow black naked line on the center of the head dividing the white hairs; entire rest of pelage, body, limbs, hands, feet and tail black.

Female. Brownish black, hairs tipped with buff or buff yellow; belly red.

Measurements. Total length about 750; tail, 400. Skull: occipitonasal length, 69; zygomatic width, 49; intertemporal width, 35; palatal length, 33; breadth of braincase, 42; median length of nasals, 14; length of upper molar series, 16; length of mandible, 48; length of lower molar series, 19.

Gray (l. c.) refers his *P. leucocephala* to P. CHRYSOCEPHALA Geoff., having never seen the type specimen and considers Geoffroy's *P. leucocephala* as distinct. In this he was mistaken, as both Gray's and Geoffroy's *leucocephala* are the same, and not separable from P. PITHECIA Linn. In the same paper, Proc. Zool. Soc. Lond., 1860, he refers his *P. irrorata* correctly to P. MONACHA.

There are two specimens in the Paris Museum marked *P. rufiventer* but neither are marked "Type," and the whereabouts of that important example is unknown. The type of *Pithecia pogonias* Gray, is in the British Museum. It is a female with the red belly, and in all respects resembles the females of P. PITHECIA. A specimen in the Paris Museum marked "Type" on the label, and on the bottom of the stand, "*leucocephalus* G. St. H." is probably Audebert's type which is exactly the same as S. PITHECIA Linn. It is a male.

PITHECIA CHRYSOCEPHALA I. Geoffroy.

Pithecia chrysocephala I. Geoff., Compt. Rend., 1850, p. 875; *Id.* Cat. Primates, 1851, p. 55; *Id.* Archiv. Mus. Hist. Nat. Paris, V, 1852, p. 557, pl. XXIX; Gray, Proc. Zool. Soc. Lond., 1860, p. 230; Sclat., Proc. Zool. Soc. Lond , 1871, p. 228; von Pelz., Bras. Säugth., 1880, p. 14.

Pithecia rufibarbata Kuhl, Beitr. Zool. 1820, p. 44, ♀; Less., Spec. Mamm., 1840, p. 175.

Pithecia ochrocephala Kuhl, Beitr. Zool., 1820, p. 44, juv.; Less., Spec. Mamm., 1840, p. 175.

Yarkea ochrocephala Reichenb., Vollständ. Naturg. Affen, 1862, p. 26.

Pithecia nocturna Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 217. (Part.).

GOLDEN-HEADED SAKI.

Type locality. "Banks of the Amazon." Type not in Paris Museum.

Geogr. Distr. Near Barra, Rio Negro, (Natterer).

Genl. Char. Head ochraceous buff instead of white. Teeth large; throat and chest bare, black. Lips covered with short white hairs.

Color. Male. Head and sides of throat ochraceous buff, divided by a black naked line on top of head; rest of pelage of body, limbs, hands, feet and tail black.

Female. General color of head, upper parts, flanks, limbs, hands, feet and tail brownish black, hairs tipped with buff. This color is very prominent on the forehead, about ears and beneath eyes; under parts and inner side of limbs orange buff. Several specimens are in the Vienna Museum collected by Natterer at Paraguaçu, Barra do Rio Negro.

Measurements. Total length about 670; tail, 340. Skull: occipito-nasal length, 65; zygomatic width, 46; intertemporal width, 33; palatal length, 23; breadth of braincase, 39; median length of nasals, 13; length of upper molar series, 17; length of mandible, 42; length of lower molar series, 20. Ex specimen from Rio Negro in British Museum called *leucocephala*.

This species varies considerably both among adult individuals and also at different ages; the young being more or less reddish brown and the females resembling young males, reddish brown hairs tipped with buff in the color of their pelage, with a white band bordering the front of the cheek.

Kuhl's types of *P. ochrocephalus* and *P. rufibarbata* are both in the Leyden Museum and both are immature. *P. ochrocephalus* has begun to assume the black pelage on different parts of the body, especially on the limbs, the hairs of which are tipped with ochraceous; and the hairs around face and on front of head are buff, probably faded, and much paler than the adult *P. ochrocephalus*. *P. rufibarbata* is a very young animal about half grown and completely in the brown pelage.

PITHECIA ALBINASA I. Geoffroy et Deville.

Pithecia albinasa I. Geoff. et Deville, Compt. Rend., XXVII, 1848, p. 498; I. Geoff., Cat. Primates, 1851, p. 56; *Id.* Archiv.

Mus. Hist. Nat., Paris, V, 1852, p. 559; Casteln., Expéd. Amér. Sud, 1855, p. 16, pl. II, fig. 12, juv.; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, pp. 177, 178; Gray, Proc. Zool. Soc. Lond., 1860, p. 231; Sclat., Proc. Zool. Soc. Lond., 1881, p. 258, pl. XXIV; Forbes, Handb. Primates, I, 1894, p. 188, pl. XVII.

Yarkea albinasa Reichenb., Vollständ. Naturg. Affen, 1862, p. 127.

Chiropotes albinasa Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 61.

WHITE-NOSED SAKI.

Type locality. Santarem, Lower Amazon. Type in Paris Museum.

Color. Entire pelage, head, body, limbs, hands, feet and tail, jet black; face around eyes and upper part of nose, black; lower part of nose to tip, lips and chin covered with short white hairs.

Measurements. Total length, 665; tail, 310; foot, 120. No skull.

The type I should judge to be a half grown individual, for, as the measurements show, it is very small. The skull being unfortunately wanting, no estimate of its age can be given. The white of the nose, lips and chin is very conspicuous.

The locality given above is written on the bottom of the stand.

PITHECIA SATANAS (Hoffmannsegg).

Simia satanas Hoffmanns., Mag. Ges. Nat. Freunde, Berlin, X, 1807, p. 93.

Simia (Pithecia) satanas Humb., Obs. Zool., 1811, (1815), p. 314, pl. XXVII.

Pithecia satanas E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 115; I. Geoff., Cat. Primates, 1851, p. 56; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 102; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 177, 178; Sclat., Proc. Zool. Soc. Lond., 1864, p. 712, pl. XLI; 1871, p. 228; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 224; Forbes, Proc. Zool. Soc. Lond., 1882, p. 442; von Pelz., Bras. Säugth., 1883, p. 16; Forbes, Handb. Primates, I, 1894, p. 186.

Brachyurus satanas E. Geoff., Cours Hist. Nat. Mamm., 1828, p. 25, 10me Leçon.

Saki noir F. Cuv., Hist. Nat. Mamm., pl. LXXVIII, juv.

Chiropotes cuxio Less., Spec. Mamm., 1840, p. 179.

Pithecia satanas var. a. *nigra,* Wagn., Schreb., Säugth. Suppl., 1855, V, p. 102.

Chiropotes satanas Reichenb., Vollständ. Naturg. Affen, 1862, p. 73, figs. 179-182; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 61.

Chiropotes ater Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 61, juv.

BLACK SAKI.

Type locality. Cameta, on the right bank of the Rio Tocantins near its mouth, Brazil.

Geogr. Distr. British Guiana; forests near Para, Lower Amazon; banks of the Rio Orinoco, Rio Tocantins and Rio Negro, Brazil.

Genl. Char. Size moderate; fur soft; hair on crown in young radiating from center and falling evenly around the head; in adult divided by a central line; tail long, bushy; whiskers long, and moderate beard on chin.

Color. General color of pelage black, with the back washed with brown; more so in the female than in the male; hands and feet black. Female does not differ in color from the male but has a shorter beard.

Measurements. Total length, 863; tail, 406. Skull: occipito-nasal length, 72; zygomatic width, 48; intertemporal width, 39; palatal length, 26; breadth of braincase, 49; median length of nasals, 8; length of upper molar series, 17; length of mandible, 42; length of lower molar series, 20.

I have examined the *Chiropotes niger* Gray, type in British Museum, and find it to be undoubtedly this species. It is not 'shining black,' but has quite a brown back, and is probably not a young individual, the hair on head radiating from the center.

PITHECIA *CHIROPOTES (Humboldt).

Simia (Pithecia) chiropotes Humb., Obs. Zool., I, 1811, (1815), p. 311.

Pithecia chiropotes E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 116; Kuhl, Beitr. Zool., 1820, p. 43; I. Geoff., Cat. Primates, 1851, p. 56; Dahlb., Stud. Zool. Fam. Reg. Anim.

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*Trouessart in his Catalogus Mammalium, p. 43, gives among the synonyms of this species, *P. chiropotes satanas* var. *fulvo-fusca* Hoffmann., 1807, but no page cited. After most diligent search I cannot find that Hoffmannsegg ever gave the name *fulvo-fusca* to any species of monkey. It certainly is not mentioned in the Mag. Ges. Nat. Freunde, Berl., X, 1807, where P. SATANAS is described, nor in any other volume of the Magazine, and Dr. Trouessart must have been misled in citing the name attributed to Hoffmannsegg. Had this Author really called the species known as CHIROPOTES, *fulvo-fusca*, the latter appellation would have taken precedence.

Nat., fasc. I, 1856, pp. 177, 178; Sclat., Proc. Zool. Soc. Lond., 1871, p. 228; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 224; von Pelz., Bras. Säugth., 1883, p. 116; Forbes, Handb. Primates, I, 1894, p. 187.

Simia sagulata Traill, Mem. Wern. Soc., III, 1821, p. 167.

Brachyurus israelita Spix, Simiar. et Vespert. Bras., 1823, p. 11, pl. VII; Wagn., Abhandl. Bay. Akad. Münch., V, p. 433, (Part.).

Pithecia sagulata Less., Man. Mamm., 1827, p. 59.

Brachyurus chiropotes E. Geoff., Cours Hist Nat. Mamm., 1828, p. 26, 10me Leçon.

Chiropotes israelita Reichenb., Vollständ. Naturg. Affen, 1862, p. 73, fig. 183.

Chiropotes sagulata Reichenb., Vollständ. Naturg. Affen, 1862, p. 14, figs. 184-186; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 60.

RED-BACKED SAKI.

Type locality. Banks of the Orinoco, Brazil.

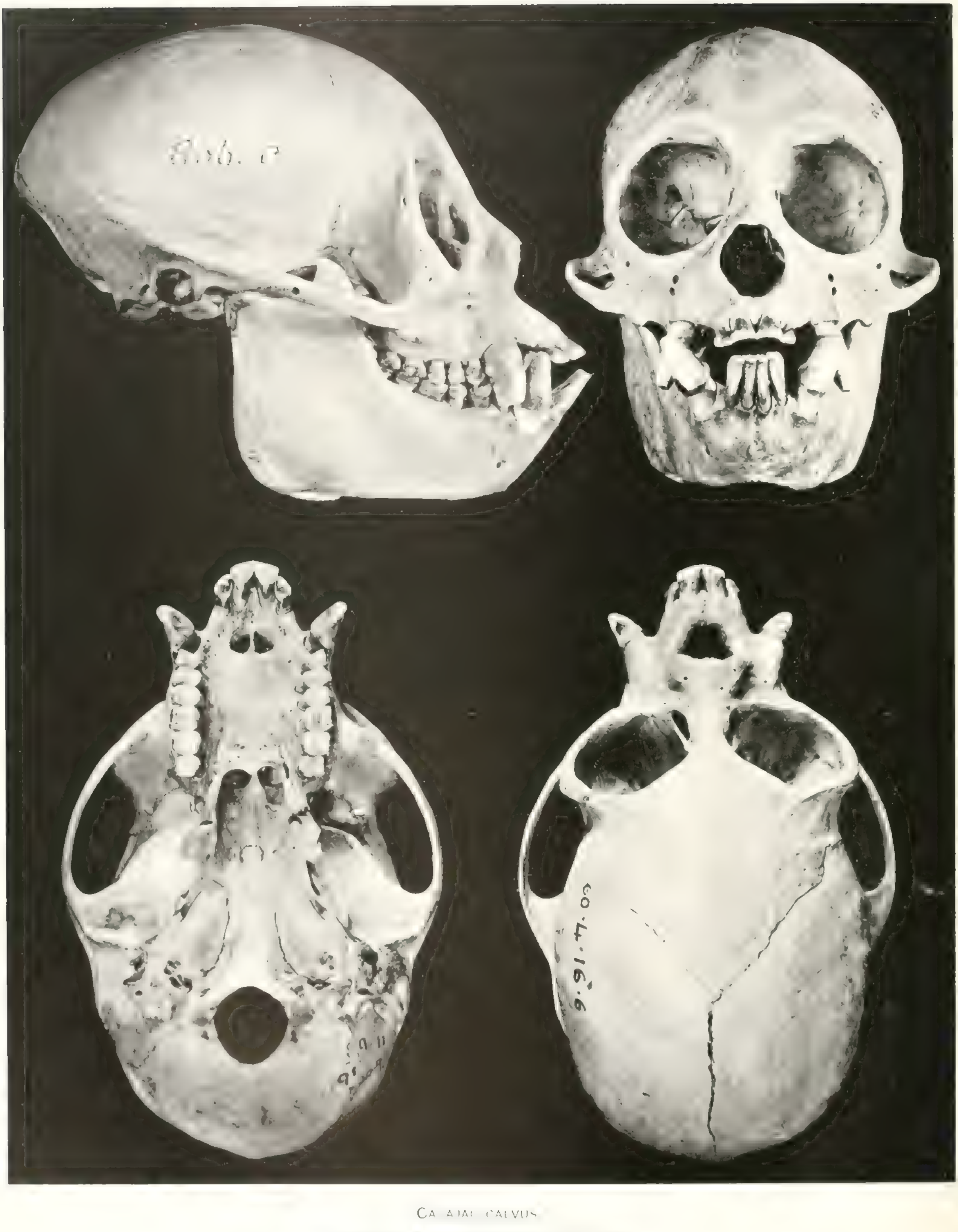
Geogr. Distr. British Guiana; region of the upper Orinoco, and that of the Rio Negro and Rio Branco, Brazil. Peru, (Tschudi); banks of the River Japura, Peru, (Spix); Cararauçu, banks of the Rio Branco, (von Pelzeln); Andros, (von Pelzeln).

Genl. Char. Larger than P. SATANAS, beard long; hair of head dividing in middle on adults, radiating from a point near the occiput in young.

Color. Top and back of head, lips, chin and whiskers black; shoulders and upper parts of body golden brown, paler, more yellowish brown in immature individuals; arms to elbows chestnut; forearms, legs and tail black tinged with chestnut, the bases of the hairs being that color; hands and feet cinnamon rufous; flanks like back; middle of abdomen blackish brown.

Measurements. Total length, 780; tail, 370; foot, 124; ear, 32, (Collector). Skull: occipito-nasal length, 76.1; Hensel, 59.1; zygomatic width, 60.7; width of braincase, 50.6; palatal length, 27.4; median length of nasals, 14.1; length of upper molar series, 18.1; length of mandible, 54.5; length of lower molar series, 22.5. Ex specimen in British Museum.

Spix's type of *Brachyurus israelita* is in the Munich Museum and is certainly the same as this species; there is no difference observable whatever.


60.4.16.6
60.4.16.6

CACAJAO CALVUS.

No. 60.4.16.6. Brit. Mus. Coll. Nat. Size.

GENUS CACAJAO. UAKARI MONKEYS.

$$\text{I. } \frac{2-2}{2-2};\quad \text{C. } \frac{1-1}{1-1},\quad \cdot\ \frac{3-3}{3-3};\quad \text{M. } \frac{3-3}{3-3} = 36.$$

CACAJAO Less., Spec. Mamm., 1840, p. 181. Type *Simia melanocephala* Humboldt.

Brachyurus Spix, Simiar. et Vespert. Bras., 1823, p. 11, tab. VII, VIII, (nec Fischer Muridæ, 1813).

Cercoptochus Glog., Hand. u. Hilfsb. Naturg. I, 1841, pp. XXVII, 41.

Ouakaria Gray, Proc. Zool. Soc. Lond., 1849, p. 9, fig.

Uacaria Flow. and Lydekk., Mamm., Liv. and Extinct, 1870, p. 712.

Cothurus Palmer, Science, N. Ser., X, 1899, p. 493, (nec Champion, Coleopt.).

Neocothurus Palm., Scien., N. Ser., XVII, 1903, p. 873.

Face short, sometimes highly colored; fur short, silky; tail very short. Skull: parietal and malar bones in contact; mandible dilated posteriorly, similar to that of the members of the genus ALOUATTA; incisors oblique; diastema present between canines and incisors of the upper jaw.

The three species comprising this genus are the only short-tailed monkeys inhabiting the New World. The brevity of this organ is not occasioned by the fact that fewer vertebræ are present, but on account of their small size. Two of the species are remarkable for the brilliant coloring of their faces, which are scarlet or vermilion-red, and this hue becomes much deeper whenever an individual is excited. The brain is well developed and complicated, very different from that of the species of Saimiri. The lower jaw is peculiar in shape resembling somewhat that of the species of ALOUATTA, but there is no especial relationship between the genera.

In their distribution each species of Uakari monkey is restricted to a certain district, and although the ranges of two of them, C. CALVUS and C. RUBICUNDUS, approach rather closely at one point, they are not known ever to mingle together. Bates, who had very good opportunities for observing these animals in their native land, states, writing of them in a general way, that they live in forests which are inundated during a great part of the year, and they never descend to the ground; the short tail being no evidence of terrestrial habits such as those of the short-tailed Baboons of various genera.

LITERATURE OF THE SPECIES.

1812. *E. Geoffroy St. Hilaire, in Annales du Muséum d'Histoire Naturelle, Paris.*
CACAJAO CALVUS described as *Brachyurus calvus,* and C. MELANOCEPHALUS as *Pithecia melanocephala.*

1823. *Spix, Simiarum et Vespertilionum Brasiliensium.*
Under the genus *Brachyurus* two species are given: C. MELANOCEPHALUS redescribed as *B. ouakary;* and *B. israelita* = PITHECIA CHIROPOTES E. Geoffroy.

1840. *R. P. Lesson, Species des Mammifères Bimanes et Quadrumanes.*
Two forms recognized by the Author are placed in CACAJAO, but this is made a subgenus of PITHECIA. The species recognized is C. MELANOCEPHALUS with "variété d'age"? *B. ouakary* Spix, = C. MELANOCEPHALUS.

1845. *E. Geoffroy Saint-Hilaire, in Archives du Muséum d'Histoire Naturelle, Paris.*
Two species are here first described under the genus *Brachyurus:* B. RUBICUNDUS, and B. CALVUS.

1862. *Reichenbach. Die Vollständigste Naturgeschichte der Affen.*
CACAJAO here contains *C. ouakary* = C. MELANOCEPHALUS; and C. MELANOCEPHALUS; the remaining species being included in *Brachyurus:* (*B.*) RUBICUNDUS and (*B.*) CALVUS.

1870. *J. E. Gray, Catalogue of Monkeys, Lemurs and Fruit-eating Bats, in Collection of the British Museum.*
In this List the three species above described are placed in a new genus *'Ouakaria.'* Individuals varying in white or red hues are considered as albinos of C. MELANOCEPHALUS!

1876. *Schlegel, Muséum d'Histoire Naturelle des Pays-Bas, Simiæ.*
Three species already described are here placed in the genus PITHECIA, and a supposed white form from the banks of the river Japura, represented only by an uncolored drawing in Bates' book, "The Naturalist on the River Amazon," (no specimens from that locality having been seen), is described as *Pithecia alba* = CACAJAO CALVUS.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

The dispersion of the species of this genus is given in the articles as described by Bates in the passages quoted. Briefly it may be said that C. CALVUS is confined to the west side of the Japura River near its mouth; to the banks of the Uatiparana near Tonantins; C. RUBICUNDUS inhabits the eastern half of the western part of the Japura delta, an extent of country 150 miles long by 60 or 80 wide, and C. MELANOCEPHALUS is found 180 miles from the mouth of the Japura according to Bates, but Humboldt says it is met with in the forests watered by the Cassiquiare, Negro and Branco rivers.

KEY TO THE SPECIES.

A. Face naked, tail short.
  a. General color whitish gray ....*C. calvus.*
  b. General color bright chestnut red ....*C. rubicundus.*
  c. General color black and chestnut red ....*C. melanocephalus.*

CACAJAO CALVUS (I. Geoffroy).

Brachyurus calvus I. Geoff., Archiv. Mus. Hist. Nat., Paris, 1845, p. 560; *Id.* Compt. Rend., XXVII, 1848, p. 576; *Id.* Cat. Primates, 1851, p. 57; Casteln., Expéd. Amér. Sud, Mamm., 1855, p. 17, pl. IV, fig. 1; Bates, Nat. Riv. Amaz., 1863, p. 308; Mivart, Proc. Zool. Soc. Lond., 1865, p. 586, (note); Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 180; Reichenb., Vollständ. Naturg. Affen, 1862, p. 70; W. A. Forbes, Proc. Zool. Soc. Lond., 1880, p. 646; 1887, p. 119, pl. XII; Beddard, Proc. Zool. Soc. Lond., 1887, p. 119, pl. XII; N. O. Forbes, Handb. Primates, I, 1894, p. 177.

Ouakaria calva Gray, Proc. Zool. Soc. Lond., 1849, pp. 8, 10, fig. (skull); *Id.* Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 62.

Scarlet-faced Monkey Bates, Nat. Riv. Amaz., II, 1863, p. 313, fig.

Pithecia calva Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 228.

BALD OR WHITE UAKARI.

Type locality. Banks of the Japura River, opposite Fonteboa, Brazil. Type in Paris Museum.

Geogr. Distr. Amazonian region, Brazil, in the angle formed by the union of the Japura River and the Amazon.

Genl. Char. Face and fore part of head naked; color pale; tail short.

Color. Face scarlet; fore part and sides of head cinnamon, the hairs becoming long below the chin, where they are reddish chestnut; top of head, neck, upper parts and outer side of limbs whitish gray; under parts cinnamon rufous; inner side of limbs whitish gray tinged with cinnamon rufous; hands and feet yellowish brown.

Young. Bates writes of the young (l. c.) p. 313, "I was surprised to find the hair of the young animal much paler in color than that of the adults, it being of a sandy and not brownish red hue, and consequently did not differ overmuch from that of the white species, the two forms therefore are less distinct from each other in their young than in their adult states."

Measurements. Skull: occipito-nasal length, 85; zygomatic width, 64; intertemporal width, 41.5; palatal length, 32; width of braincase, 52; median length of nasals, 16; length of upper molar series, 20; length of mandible, 58; length of lower molar series, 23. Vertebræ: Cervical, 7; Dorsal, 13; Lumbar, 6; Sacral, 4; Caudal, 15 to 20.

The type in the Paris Museum is so faded that it will no longer serve for comparison of colors.

Bates says of this species, (l. c.) under the trivial name of 'white Uakari,' that it is only found on the banks of the Japura River near its principal mouth, and is confined, so far as he was able to ascertain, to its western side. It goes in small troupes, in the tops of the highest trees, and subsists on various kinds of fruits. The hunters say, while nimble in its movements, it does not often leap, but runs along the larger limbs when travelling from tree to tree. The young are carried on the back of the mother. The Indians shoot them with poisoned arrows, and they go a considerable distance after being wounded, and an experienced hunter is required to follow them. The most expert hunter is he who can keep up with a wounded Uakari, and catch it in his arms when it falls exhausted. If then he wishes to keep the animal alive, a pinch of salt, the antidote for the poison, is put into its mouth and it revives. These monkeys are in great demand for presents, and high prices are asked for them, often as much as the equivalent of nearly twenty dollars.

Adult Uakaris taken in the above manner rarely become tame, remaining peevish and sulky and bite every one who comes near them, and are quite silent in captivity, and in the course of a few days refuse to eat and die. Many succumb to inflammation of the lungs. One he had as a pet died of this malady. Although kept in an airy veranda, it soon lost its appetite; its coat which was long, smooth and glossy, became dingy and ragged, like museum specimens, and its bright scarlet face became dull. When in health, this color extends to the hair on the forehead and temples, and over the cheeks and jaw to the neck. As their hue remained for several hours after the animal's death, he supposed it was due, at least partly, to a pigment beneath the skin, which would probably retain its color after the circulation ceased.

After witnessing so many proofs of this monkey's morose disposition, he was to meet a very lively individual at the house of a friend. It came from an adjoining room, ran to him and climbed into his lap and nestled there, looking up at him and grinning in the way monkeys have. It was young, and had been captured after its mother had been shot. Its teeth were still incomplete and its face was pale and mottled, the scarlet hue of the adult not having yet appeared. It had been reared with the children and allowed to run about the house.

The Uakari is one of the many animals the Brazilians call "mortal" or with delicate constitutions in contradistinction to those which are "duro" or hardy. Most of those sent from Éga die before reaching Pará, and the difficulty it experiences in accommodating itself to changed conditions probably influences its restricted range, for its limit is an area of swampy woods of about sixty miles in extent, without any barrier to prevent it from wandering farther, except towards the south. One, which he had on his boat on the Rio Negro, and which was quite tame, went on shore one morning at Barra and disappeared in the forest and was gone for twenty-four hours, when he reappeared and walked down the bowsprit, his mode of departure, to his usual place on deck. He had evidently found the forest, which was very different from his humid home on the Japura, uncongenial, and preferred the boat and captivity, to freedom in such a district.

Schlegel (l. c.) has given the name of *Pithecia alba* to the monkey described by Bates, as he considered the uncolored drawing in the book represented a distinct species from the Uakari found on the banks of the Solimoens, from the fact that the artist has represented the hair of the animal much longer than it is on the other, and because Bates speaks of it as having a shining whitish hue. It may possibly be that two nearly allied forms of Uakari do exist on these rivers, but until specimens from the two localities are obtained and compared, it is hazardous to describe one as distinct upon an uncolored drawing, and not a very meritorious one at that. It is not easy at times to recognize different species of monkeys when examples are accessible, and it is hardly worth while to add to difficulties already existing, and which are quite sufficient to give the investigator trouble enough, without bestowing names on possible species that the describer has never seen! I have included Schlegel's name among the synonyms of this species, on the strength of the Scotch verdict "not proven." The so called white Uakari is probably an immature individual of the present species.

CACAJAO RUBICUNDUS (I. Geoffroy).

Brachyurus rubicundus I. Geoff., Compt. Rend., XXVII, 1848, p. 498; *Id.* Archiv. Mus. Hist. Nat. Paris, 1845, pl. XXX; *Id.* Cat. Primates, 1851, p. 57; Wallace, Proc. Zool. Soc. Lond., 1852, pp. 107, 108; Casteln., Expéd. Amér. Sud, Mamm., 1855, p. 19, pl. IV, fig. 2; Reichenb., Vollständ. Naturg. Affen, 1862, p. 76, fig. 189; W. A. Forbes, Proc. Zool. Soc. Lond., 1880, p. 646, pls. LXI, LXII, figs. 1-6; H. O. Forbes, Handb. Primates, 1894, p. 176, pl. XVI.

Ouakaria rubicunda Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 62.

Pithecia rubicunda Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 228.

RED UAKARI.

Type locality. North bank of the Amazon opposite Olivença, Brazil. Type in Paris Museum.

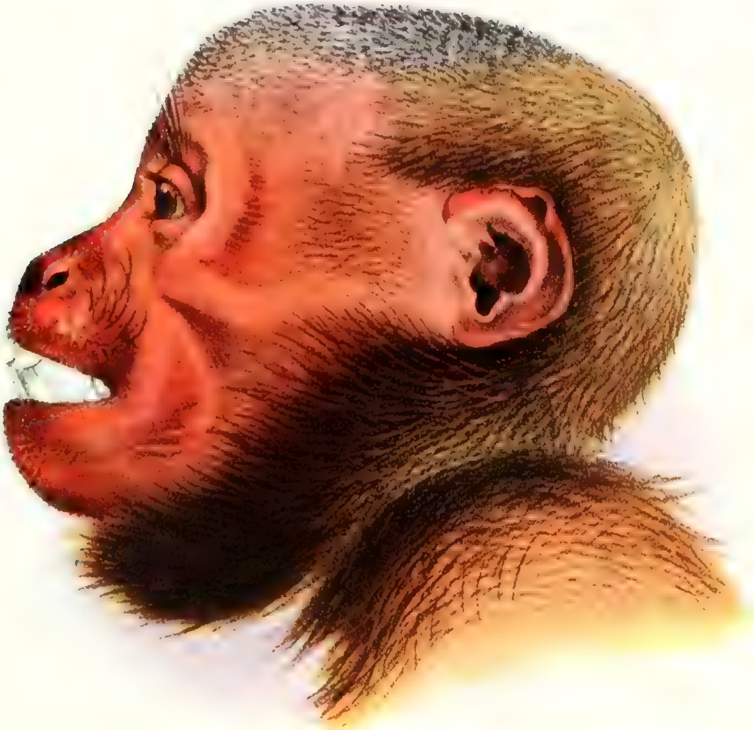
Geogr. Distr. Forests of the Amazon, north side, from Iça River westward. Exact range not known.

Genl. Char. Hair on arms and shoulders long, forming a cape. Color like that of the Ourang.

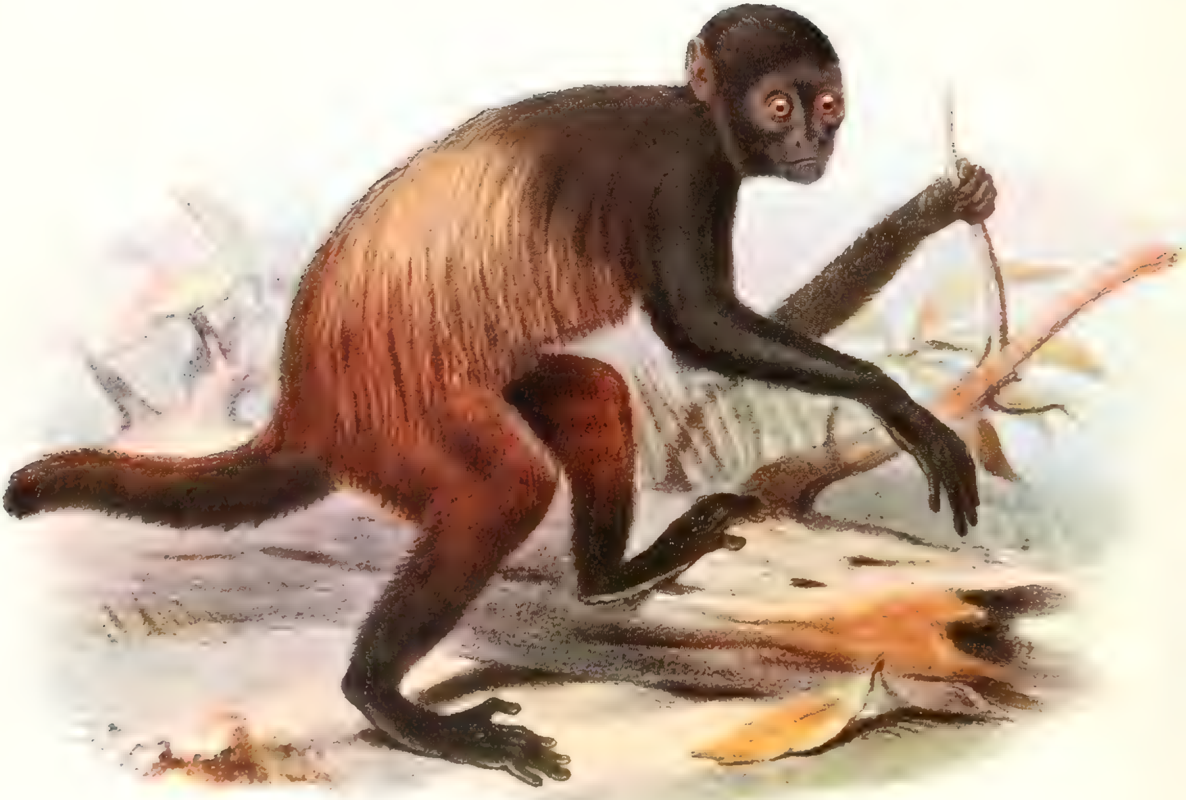
Color. Entire face, forehead and sides of head naked, bright vermilion red; middle of head on top gray; rest of head, neck, limbs, body above and beneath, hands, feet and tail bright chestnut red. Ex type Paris Museum.

Measurements. Skull of type in specimen. Another example has occipito-nasal length, 102; zygomatic width, 66; intertemporal width, 42; median length of nasals, 13; length of upper molar series, 20; length of mandible, 64; length of lower molar series, 24.

Bates in the work from which extracts have already been taken says: "A most curious fact connected with this monkey is the existence of an allied form, or brother species, in a tract of country lying to the west of its district. This differs in being clothed with red instead of white hair, and has been described by Isidore Geoffroy St. Hilaire



CACAJAO RUBICUNDUS (Head)



Cacajao melanocephalus

(from specimens brought to Paris in 1847 by the Compte de Castelnau) as a distinct species, under the name of Brachyurus rubicundus. It wholly replaces the white form in the western parts of the Japurá delta; that is to say, in a uniform district of country, 150 miles in length, and sixty to eighty in breadth, the eastern half is tenanted exclusively by white Uakaris, and the western half by red ones. The district, it may be mentioned, is crossed by several channels, which at the present time doubtless serve as barriers to the dispersal of monkeys, but cannot have done so for many centuries, as the position of low alluvial lands, and the direction of channels in the Amazon Valley, change considerably in the course of a few years. The red-haired Uakari appears to be most frequently found in the forests lying opposite to the mouth of the river which leads to Fonteboa, and ranges thence to the banks of the Uatíparaná, the most westerly channel of the Japurá, situated near Tunantins. Beyond that point to the west there is no trace of either the red or the white form, nor of any other allied species. Neither do they pass to the eastward of the main mouth of the Japurá, nor to the south shore of the Solimoens. How far they range northwards along the banks of the Japurá, I could not precisely ascertain; Senhor Chrysostomo, however, assured me that at 180 miles from the mouth of this river, neither white nor red Uakarí is found, but that a third, black-faced and gray-haired species takes their place.

"I saw two adult individuals of Brachyurus rubicundus at Ega, and a young one at Fonteboa; but was unable to obtain specimens myself, as the forests were inundated at the time I visited their locality. I was surprised to find the hair of this young animal much paler in colour than that of the adults, it being of a sandy and not of a brownish-red hue, and consequently did not differ very much from that of the white species; the two forms, therefore, are less distinct from each other in their young than in their adult states. The fact of the range of these singular monkeys being so curiously limited as here described, cannot be said to be established until the country lying between the northern shore of the Solimoens and New Granada be well explored, but there can be no doubt of the separation of the two forms in the Delta lands of the Japurá, and this is a most instructive fact in the geographical distribution of animals."

CACAJAO MELANOCEPHALUS (E. Geoffroy).

Pithecia melanocephala Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 117; Schleg., Mus. Pays-Bas, Simiæ, 1876. p. 229.

Brachyurus ouakary Spix, Sim. et Vespert. Bras., 1823, p. 12, pl. VIII; Less., Spec. Mamm., 1840, p. 183.

Cacajao melanocephalus Less., Spec. Mamm., 1840, p. 182.

Ouakaria spixi Gray, Proc. Zool. Soc. Lond., 1849, p. 10, fig. 1.

Brachyurus melanocephalus W. A. Forbes, Proc. Zool. Soc. Lond., 1880, p. 645, pl. LXIII; H. O. Forbes, Handb. Primates, I, 1894, p. 175.

Ouakaria melanocephala Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 62.

BLACK-HEADED UAKARI.

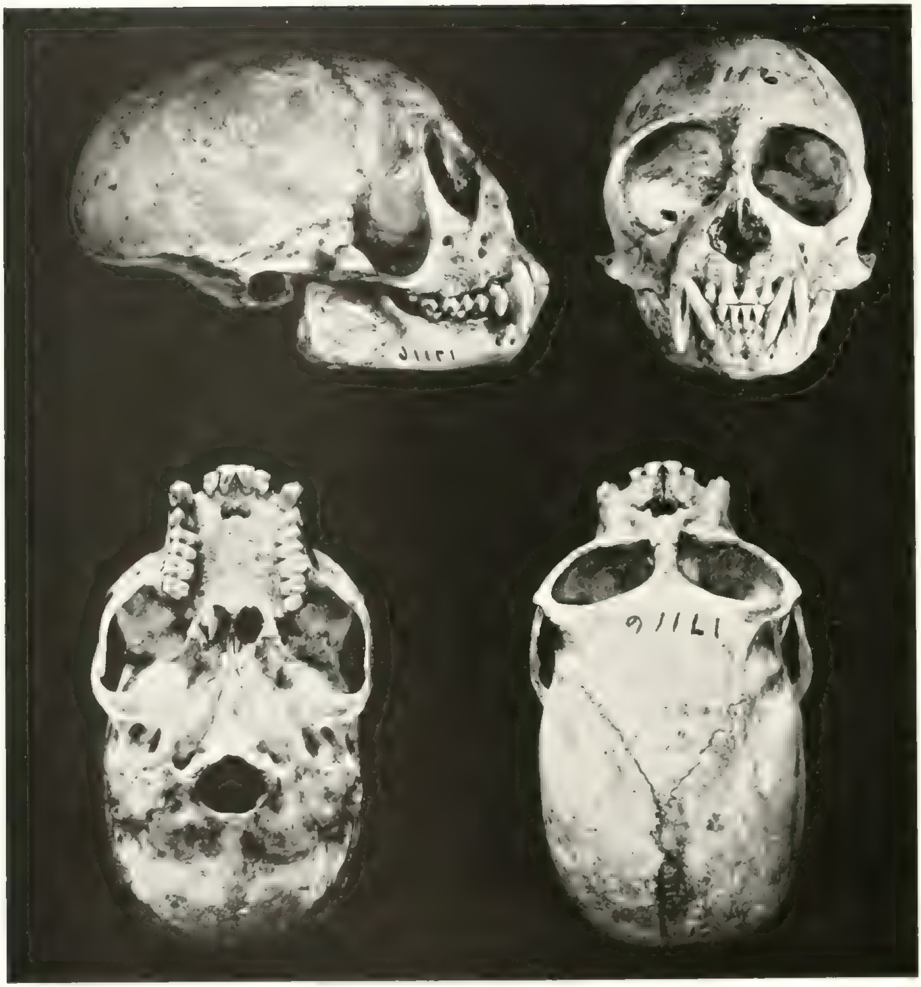
Type locality. Banks of the Cassiquiare River.

Geogr. Distr. Forests through which the Rio Cassiquiare, Rio Negro, and Rio Branco flow; Brazil.

Color. Face naked, and with the head, shoulders, limbs, hands, feet and tail is black, except a portion of the upper side of tail which is chestnut; back and sides reddish and black; rump and middle of thighs reddish chestnut; under parts blackish.

Measurements. Skull: occipito-nasal length, 82; Hensel, 65; zygomatic width, 61; intertemporal width, 40; median length of nasals, 12; length of upper molar series, 19; length of mandible, 55; length of lower molar series, 21.

I examined Spix's type of *Brachyurus ouakary*, Munich Museum, and found it agreed with Humboldt's species.



SAIMIRI ŒRSTEDI.

[illegible]

No. 17116 Amer. Mus. Nat. Hist. Coll. Nat. Size.

GENUS SAIMIRI. SQUIRREL MONKEYS.

$$\mathrm{I.}\ \frac{2-2}{2-2};\quad \mathrm{C.}\ \frac{1-1}{1-1};\quad \mathrm{P.}\ \frac{3-3}{3-3};\quad \mathrm{M.}\ \frac{3-3}{3-3} = 36.$$

SAIMIRI Voigt, Cuvier's Thierreich, I, 1831, p. 95. Type *Simia sciurea* Linnæus.
Chrysothrix Kaup, Das Thierr., I, 1835, p. 50, fig.
Pithesciurus Less., Spec. Mamm., 1840, pp. 116, 157-160.
Saimiris Geoff., Compt. Rend., Paris, XVI, 1843, p. 1151.

Head rounded; eyes large, approximate; ears large; septum of nose broad; tail long, tufted at tip, non-prehensile; thumbs very short. Skull elongate, braincase large, arched, prolonged posteriorly; facial portion small; middle upper incisors larger than outer, canines long, pointed; partitions between orbits and nostrils thin, membranaceous.

The Squirrel Monkeys are small animals, ranging from Nicaragua through the valley of the Amazon into Bolivia and Peru, and with their brilliant coloring are perhaps the most beautiful of their tribe. They are strictly arboreal, and as Bates remarks, are the most common of the ordinary monkeys of the American forests. By some writers they have been considered as closely related to the nocturnal monkeys, but the relationship is one caused more by environment and consequently similar methods of life than through their organization, and it may therefore be regarded in the light of being artificial. They possess large eyes, small ears, and a small inquisitive face, but they would probably make very unsuccessful hunters by night, as their vision is only adapted for daylight. Six species and two subspecies are now recognized, with fairly distinctive characters. It has been found necessary to make certain changes in the nomenclature of some forms either on account of previous names having been overlooked by some of the earlier writers, or the law of priority disregarded. There is little or no change in the appearance of the sexes, or between old and young individuals, and these causes of frequent errors in other groups being non-existent, the synonymy of the various forms is happily brief.

LITERATURE OF THE SPECIES AND SUBSPECIES.

1758. *Linnæus, Systema Naturæ.*

Under *Simia,* in which genus Linnæus placed all species of

Apes and Monkeys, *Simia sciurus* = Saimiri sciureus is described.

1811? *Humboldt, Recueil d'Observations de Zoologie et d'Anatomie.* Saimiri cassiquiarensis from the banks of the Cassiquiare River is described as *Chrysothrix sciureus cassiquiarensis.*

1812. *E. Geoffroy St. Hilaire, in Annales du Muséum d'Histoire Naturelle de Paris.*
Callithrix sciureus var. B. afterwards named S. ustus by I. Geoffroy St. Hilaire.

1834. *D'Orbigny, Nouvelles Annales du Muséum d'Histoire Naturelle.* Saimiri boliviensis described as *Callithrix boliviensis.*

1836. *D'Orbigny, Voyage dans l'Amérique Méridionale, Mammifères.*
Saimiri boliviensis redescribed as *Callithrix entomophaga.*

1840. *R. P. Lesson, Species Mammifères Bimanes et Quadrumanes.* The genus *Pithesciureus* is here employed instead of Saimiri, which antedates it. *P. saimiri* = S. sciureus; var. A. ex le Brésil, *P. saimiri;* var. B. *P. entomaphagus* ex le Brésil; var. C. *P.* cassiquiarensis, ex Spanish Guiana; and var. D. the *Callithrix sciureus* var. B. Geoffroy. Of these *P. sciureus* and *P. cassiquiarensis* are valid. *P. entomophaga* = S. boliviensis.

1844. *I. Geoffroy St.-Hilaire, Archives du Muséum d'Histoire Naturelle, Paris.*
Saimiri ustus first described.

1844. *I. Geoffroy St.-Hilaire, Archives du Muséum d'Histoire Naturelle, Paris.*
Saimiri cassiquiarensis redescribed as *Saimiri lunatus.*

1844. *Wagner, Königlich-Bayerische Akademie der Wissenschaften, München.*
Saimiri cassiquiarensis redescribed as *Chrysothrix nigrivittatus.*

1855. *Wagner, Schreber, Die Säugthiere in Abbildungen nach der Natur mit Beschreibungen. Supplementband.*
Three species are given under the genus *Chrysothrix:* (*C.*) sciurea; (*C.*) *entomophaga* = Saimiri boliviensis; and (*C.*) *nigrivittata* = Saimiri cassiquiarensis.

1862. *Reichenbach, Die Vollständigste Naturgeschichte der Affen.* The genus *"Saimiris,"* Saimiri, contains the following species in this work: S. sciureus; S. ustus; *S. entomophaga* = S. boliviensis; *S. lunulatus* = S. cassiquiarensis; and *S. ochroleucus* which is a Cebus.

1872. *Reinhardt, Naturhistoriske Forening, Kjobenhaven.*
SAIMIRI ŒRSTEDI described as *Chrysothrix œrstedi.*

1876. *Schlegel, Muséum des Pays-Bas, Simiæ.*
In this catalogue four species are recognized under the genus SAIMIRI: S. SCIUREUS; *S. lunulatus* = S. CASSIQUIARENSIS; S. ŒRSTEDI; and *S. entomophaga* = S. BOLIVIENSIS. S. USTUS Geoff., is considered the same as S. SCIUREUS.

1904. *Thomas, in Annals and Magazine of Natural History.*
SAIMIRI ŒRSTEDI redescribed as *Saimiri œrstedi citrinellus.*

1907. *Elliot, (D. G.) in Annals and Magazine of Natural History.*
SAIMIRI MACRODON described.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES AND SUBSPECIES.

The range of the various species is as yet but imperfectly known for several have been obtained only from a few localities, and some indeed from only one, and those given heretofore by previous writers are to some extent misleading as more than one species have been confused together and the separate ranges united. The most northern distribution of members of this genus is in Central America where S. ŒRSTEDI is found from south of the Herradura Mountains to Panama. In northern South America S. SCIUREUS is met with in the three Guianas, Venezuela and Colombia, and to the south on both banks of the Amazon and some of its tributaries as the Rio Negro, Rio Uaupe, Rio Javari, (Schlegel), etc., and in the Province of Goyas, Brazil. S. CASSIQUIARENSIS ranges from the banks of the Orinoco south of the Cataracts to the Rio Cassiquiare, and in the forests through which the Rio Caura flows above the rapids of Mura, and thence westward to the Rio Copataza in Ecuador. From Humayta, middle Rio Madeira, also in Ecuador, S. MADEIRÆ has been procured. On the banks of the Ucayali, Peruvian Amazons, *S. ustus* is found and at Cosnipata in eastern Peru, *S. b. nigriceps* is met with. S. MACRODON has been obtained from the banks of the Rio Copataza in Ecuador; and from those of the Rio Juara, and from Marcopatá in Peru. S. BOLIVIENSIS occurs in the Sierras Guarayas, Bolivia.

KEY TO THE SPECIES AND SUBSPECIES.

A. Head gray with a yellowish brown tinge.
  a. Forearms, hands and feet ochraceous, teeth small.
    a.′ Without black curved line in front of ears. . .*S. sciureus.*

b.' With black curved line in front of ears.*S. cassiquiarensis.*
b. Forearms, hands and feet tawny; teeth large ...*S. macrodon.*
B. Head blue gray without yellow tinge...............*S. madeiræ.*
C. Head golden yellow and black.......................*S. ustus.*
D. Head black or blackish.
a. Upper parts grizzled yellow.
a.' Forearms, hands and feet saffron yellow.*S. boliviensis.*
b.' Forearms, hands and feet deep golden yellow ....*S. b. nigriceps.*
b. Upper parts ochraceous rufous ....*S. œrstedi.*

SAIMIRI SCIUREUS (Linnæus).

Simia sciurea Linn., Syst. Nat., I, 1758, p. 19; I, 1766, p. 43; Bodd., Elench. Animal, 1784, p. 62.

Callithrix sciureus E. Geoff., Ann. Mus. Hist. Nat. Paris, XIX, 1812, p. 113; Casteln., Expéd. Amér. Sud, Mamm., I, 1855, p. 13.

Saguinus sciureus Less., Man. Mamm., 1827, p. 56.

Chrysothrix sciureus Kaup, Das Thierr., I, 1835, p. 55; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 120, pl. XIX; Huxley, Proc. Zool. Soc. Lond., 1861, p. 250; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 156; Sclat., Proc. Zool. Soc. Lond., 1880, p. 395; von Pelz., Kaiserl. Königl. Zool.-Botan. Gesell. Wien, XXXVIII, 1883, p. 21; von Bardel, Proc. Zool. Soc. Lond., 1894, p. 359; Forbes, Handb. Primates, I, 1894, p. 156.

Pithesciurus saimiri Less., Spec. Mamm., 1840, p. 157.

Cebus sciureus Blainv., Ostéog., 1841, Atl., Cebus, pl. VI.

Saimiri sciureus I. Geoff., Cat. Primates, 1851, p. 37; Dahlb., Stud. Zool. Fam. Reg. Anim. Natur., fasc. I, 1856, p. 157; Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 242.

Saimiris sciureus Reichenb., Vollständ. Naturg. Affen, 1862, p. 15, figs. 44, 45.

Saimiri sciurea Elliot, Cat. Mamm. Field Columb. Mus., VIII, 1906, p. 558, Zool. Ser.; Thos., Proc. Zool Soc. Lond., 1911, p. 129.

COMMON TITI MONKEY.

Type locality. "India."

Geogr. Distr. Northern South America in Venezuela (Schlegel); Guianas, (English, Dutch and French), on the Amazon, and several of its tributaries on both banks, into Colombia; Santa Fé de Bogota, (I. Geoffroy).

Genl. Char. Posterior lobes of the brain overlap the cerebellum by one fifth their length. (Huxley).

Color. Face flesh color, covered with small white hairs; lips bluish black; white superciliary streak extending over sides of head to ears; head, arms above elbows, shoulders and legs gray with a yellowish brown tinge; back gray washed with golden yellow; the dorsal region chestnut in some specimens, but always darker than the rest of the back; arms below elbows, hands and feet ochraceous; under parts yellowish white; inner side of limbs ochraceous yellow; tail iron gray for three fourths its length, rest black; ears white.

Measurements. Total length, 694; tail, 384; foot, 78; ear, 28. Skull: occipito-nasal length, 58; zygomatic width, 38; intertemporal width, 30; palatal length, 15; width of braincase, 31; height of braincase over zygomata, 29; median length of nasals, 8; length of upper molar series, 12; length of mandible, 34; length of lower molar series, 14; width of palate between canines, 10; between last molars, 12.

SAIMIRI CASSIQUIARENSIS (Humboldt).

Chrysothrix sciureus cassiquiarensis Humboldt, Rec. Obs. Zool., I, 1811, (1815), p. 334.

Simia sciureus cassiquiarensis var. D. Less., Spec. Mamm., 1840, p. 160.

Saimiris lunulatus I. Geoff., Archiv. Mus. Hist. Nat., Paris, IV, 1844, p. 18; Reichenb., Vollständ. Naturg. Affen, 1862, p. 16.

Chrysothrix nigrivittatus Wagn., Abhand. Bayer. Akad. Münch., 1844, p. 461.

Saimiri lunulatus Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 245.

Chrysothrix sciurea (nec Linn.), Thos., Proc. Zool. Soc. Lond., 1880, p. 395.

Type locality. Banks of the Rio Cassiquiare, Venezuela.

Geogr. Distr. Banks of the Orinoco south of the Cataracts, to the Rio Cassiquiare, and Rio Guaviare, and in the forests through which the Rio Caura flows above the rapids of Mura, Venezuela, (Humboldt).

Color. Top of head and nape speckled buff and black; line from occiput passing above ears and curving downwards, black; forehead, face, nose, chin, throat, ears and sides of neck white; dorsal region red speckled with black; arms to elbows, and legs to ankles dark gray; forearms, hands and feet ochraceous; under parts and inner side of limbs yellowish white; tail like back at root, then iron gray for three fourths the length, apical portion black.

Measurements. About the size of S. SCIUREUS. Skull: occipito-nasal length, 60; zygomatic width, 37; intertemporal width, 32; median length of nasals, 10; length of upper molar series, 18; length of mandible, 15; length of lower molar series, 15.

This species has been usually known as *S. lunulatus* Geoff., but this name is antedated by Humboldt's CASSIQUIARENSIS bestowed on it thirty-three years previously. The whereabouts of the type does not appear to be known.

Humboldt states that this Squirrel Monkey is common south of the cataracts of the Orinoco; some are found there of a more slender form and are very difficult to tame, and also on the banks of the Guaviare River, and in the forests in which the Caura River flows above the rapids of Mura. The smallest and prettiest of the Titis are those of Cassiquiare. Schlegel says (l. c.) that an individual of this species was brought to his notice, which was procured by a French naturalist near the Oyapock, a river separating French from Portuguese Guiana. Spix, according to Wagner, obtained three examples of this species, called by Wagner *C. nigrivittatus*! at the junction of the Teffé and Solimoens rivers near Éga, but Spix does not mention this monkey.

SAIMIRI MACRODON Elliot.

Saimiri macrodon Elliot, Ann. Mag. Nat. Hist., XIX, 1907, 7th Ser., p. 190.

Type locality. Copataza River, Ecuador. Type in British Museum.

Geogr. Distr. Upper waters of the Amazon, Ecuador; and Rio Jurua; Marcopata, Peru.

Genl. Char. Similar to S. SCIUREUS, but hands and feet much darker. Skull has a much higher and narrower braincase; much wider palate, and larger teeth with the external line of the upper tooth row much more curved; zygomatic arch wider; and intertemporal width, greater; bullæ narrower and longer.

Color. General color like S. SCIUREUS with the back darker, that of the type being tawny and black on the dorsal region, golden yellow and black on the flanks; arms above elbow dark gray washed with yellow; legs paler; under parts yellowish white; arms from a short distance below the elbow, hands and feet tawny; head and tail like S. SCIUREUS. Ex type British Museum.

Measurements. Size similar to S. SCIUREUS. Skull: occipito-nasal length, 64.5; zygomatic width, 43; intertemporal width, 32; median length of nasals, 11; width of braincase, 36; height of braincase above zygomata, 35; palatal length, 19; length of upper molar series, 13; length of mandible, 40; length of lower molar series, 16; width of palate between canines, 12; width of palate between last molars, 13. Ex type British Museum.

While the general color of this animal resembles that of S SCIUREUS from the east coast of South America, it is at once noticeable by its much darker forearms, hands and feet. But the great differences between them are exhibited in the skull, and the large teeth of the present species. The braincase has quite a different shape, being large and narrow with an elevated forehead sloping rapidly downward to the occiput where it is narrow and rounded. The palate is wider throughout its length, while the teeth are much larger, the canines being also stouter and broader. Several specimens were brought by Mr. Buckley from the type locality and there are others in the British Museum Collection from the Jurua River, a tributary of the Upper Amazon, and from Marcopata, Peru.

SAIMIRI MADEIRÆ Thomas.

Saimiri madeiræ Thos., Ann. Mag. Nat. Hist., II, 1908, 8th Ser., p. 90.

Type locality. Humayta, Middle Rio Madeira, Ecuador. Type in British Museum.

Genl. Char. No yellow tinge on head, and no fulvous above hands and feet.

Color. Top of head and nape, arms from wrists to shoulders, and legs above ankles, chin and lips blue gray; face, sides of head and neck, entire under parts, inner side of legs and inner side of arms to elbows, white; inner side of arms below elbows yellowish grading into golden brown at wrists; hands and feet golden brown; upper parts of body golden yellow and black; sides chrome yellow; tail black above, the yellow at base of hairs showing, beneath white, apical third jet black all around. Ex type British Museum.

Measurements. Total length, 391; tail, 41; hind foot, 83. Skull: occipito-nasal length, 69; Hensel, 47.3; zygomatic width, 40.8; palatal length, 27; median length of nasals, 17.6; length of upper molar series, 12.5; length of mandible, 45.6; length of lower molar series, 14.5. Ex type British Museum.

This species resembles S. SCIUREUS but the forearms are bluish gray instead of fulvous. Several specimens were obtained by W. Hoffmanns. The exact locality being about 63° West and 7° 30′ South.

SAIMIRI USTUS I. Geoffroy.

Saimiri ustus I. Geoffroy, Archiv. Mus. Hist. Nat., Paris, IV, 1844, p. 15, pl. I; Reichenb., Vollständ. Naturg. Affen, 1862, p. 16, fig. 40; Bartlett, Proc. Zool. Soc. Lond., 1871, p. 219; Sclat., Proc. Zool. Soc. Lond., 1872, p. 688, fig. (head).

Saimiri ustus Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 157, 158.

Chrysothrix ustus Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 53.

Saimiri sciureus Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 242, (nec Linn.).

Chrysothrix usta Forbes, Handb. Primates, I, 1894, p. 154.

GEOFFROY'S SQUIRREL OR TITI MONKEY.

Type locality. Unknown. Type in Paris Museum.

Geogr. Distr. Peruvian Amazons, Bolivia.

Genl. Char. Ears naked save a fringe of hairs on the inside near the upper edge; general color golden yellow and black.

Color. Upper part of head, shoulders, upper arms to elbow, and hind limbs to ankles golden yellow speckled with black, the hairs being golden yellow with black tips; back from neck to rump orange red and black, the latter being the tips to the orange red hairs; face around eyes and upper part of nose flesh color, muzzle black; cheeks pale yellow; sides of head and neck, throat, under parts of body and forearms golden yellow; hands and feet reddish brown; tail, hairs golden yellow with black tips, the tip of tail all black. Ex type Paris Museum.

Measurements. Size about equal to S. SCIUREA Linn. Skull: total length, 72. (Geoff. Arch. Mus.).

The type of this form is in the Paris Museum and fairly well preserved, though probably the golden yellow of the greater part of the body has faded somewhat. The back, however, is conspicuous for the depth of its orange red color, and more resembles the hues of the Central American forms than any of the eastern South American examples. With our present knowledge of this group, in spite of Schlegel's unqualified statement, (l. c.) it seems best to consider

Geoffroy's species as distinct, until undoubted evidence is obtained to the contrary.

SAIMIRI BOLIVIENSIS (D'Orbigny).

Callithrix boliviensis D'Orbig., Nouv. Ann. Mus Hist. Nat., Paris, VIII, 1834, p. 89.

Callithrix entomophaga D'Orbigny, Voy. Amér. Mérid., Mamm., IV, 1836, p. 10, pl. IV.

Callithrix sciureus var. B. Less., Spec. Mamm., 1840, p. 160.

Saimiris entomophaga D'Orbig., Voy. Amér. Mérid., Mamm., IV, 1847, p. 10; I. Geoff., Cat. Primates, 1851, p. 58; Casteln., Expéd. Amér. Sud, 1855, p. 14; Dahlb., Stud. Zool. Fam. Reg. Anim. Nat., fasc. I, 1856, pp. 156, 157.

Chrysothrix entomophaga Wagn., Schreb., Säugth. Suppl., V, 1855, pl. X, p. 12; Reichenb., Vollständ. Naturg. Affen, 1862, p. 16, fig. 47; Gray, Cat. Monkeys, Lemurs and Fruit-eating Bats, Brit. Mus., 1870, p. 53; von Pelz., Kaiserl-Königl. Zool.-Botanische Gesell. Wien, XXXIII, 1883, p. 21; Forbes, Handb. Primates, I, 1894, p. 155.

Chrysothrix sciurea Frantz., Wiegm., Archiv. Naturg., XXXIV, 1869, p. 260, t. 35, (nec Linn.).

Saimiri entomophagus Schleg., Mus. Pays-Bas, Simiæ, 1876, p. 246.

BLACK-HEADED TITI MONKEY.

Type locality. Sierras Guarayas, Bolivia. Type not in Paris Museum.

Geogr. Distr. Bolivia, and according to Schlegel, Castelnau found it at Sarayaçu on the banks of the Ucayali, Peru; but this was probably S. MADEIRÆ.

Color. Top and sides of head and nape black; upper parts wax yellow lined with black; arms to elbows, and legs to ankles grayish yellow; under parts and inner side of limbs straw yellow; hands and feet, saffron yellow; tail, yellowish gray lined with black, apical portion black. Ex type British Museum.

Measurements. Size about same as S. SCIUREUS. Skull: occipitonasal length, 59; zygomatic width, 37; intertemporal width, 29.5; palatal length, 16; breadth of braincase, 37; median length of nasals, 9; length of upper molar series, 12; length of mandible, 32; length of lower molar series, 13.5. Ex type in British Museum.

SAIMIRI BOLIVIENSIS NIGRICEPS Thomas.

Saimiri boliviensis nigriceps Thos., Ann. Mag. Nat. Hist., X, 1902, p. 246.

Chrysothrix entomophaga (nec D'Orb.), Wagn., Wiegm., Archiv., 1842, p. 357; Wagn., Schreb., Säugth. Suppl., V, 1855, p. 121, pl. X.

Type locality. Cosnipata, eastern Peru. Type in British Museum.

Genl. Char. Black cap on crown of head; hands and feet to tips of fingers and toes golden yellow; tail grizzled yellow.

Color. Top of head glossy black; black line in front of ears; white auricular patch; upper parts of body grizzled yellowish; under parts and inner side of limbs pale yellow; tail above grizzled yellow, beneath a central line clear yellow, tip black; inside of ears yellow. Ex type British Museum.

Measurements. Total length, 730; tail, 400; foot, 76, (skin). Skull: total length, 66; zygomatic width, 41.5; breadth of braincase, 35; basal length, 42; occipito-nasal length, 61; intertemporal width, 29; median length of nasals, 8.5; length of upper molar series, 14; length of mandible, 36; length of lower molar series, 16. Ex type British Museum.

SAIMIRI ŒRSTEDI (Reinhardt).

Chrysothrix œrstedi Reinh., Vidensk. Medd. Naturhistoriske Forensing Kjobenh., 1872, p. 157, pl. III; Sclat., Proc. Zool. Soc. Lond., 1873, p. 434.

Chrysothrix sciurea Sclat., Nat. Hist. Rev., 1861, p. 510, (nec. Linn.).

Saimiris entomophaga Sclat., Proc. Zool. Soc. Lond., 1872, p. 3, (nec D'Orbigny).

Saimiri œrstedi Elliot, Mamm. Middle America and W. Indies, F. C. M. Pub., IV, Pt. II, 1904, p. 731, figs. 166, CXL, Zool. Ser.; *Id.* Check-L. Mamm. N. Amer. Cont. and W. Indies, F. C. M. Pub., VI, 1905, p. 534, Zool. Ser.; *Id.* Cat. Mamm. Field Columb. Mus., F. C. M. Pub., VIII, 1906, p. 559, fig. LXXXIII, Zool. Ser.

Saimiri œrstedi citrinellus Thos., Ann. Mag. Nat. Hist., 7th Ser., XIII, 1904, p. 250.

ŒRSTED'S TITI MONKEY.

Type locality. Chiriqui, Panama.

Geogr. Distr. Guatemala? to Panama, Central America.

Color. Face and sides of head to ears white; top of head and nape black; shoulder and outer side of arms to below elbows, and legs to ankles gray washed with yellow; upper parts dark ochraceous rufous, dorsal line dark orange rufous; throat and between arms white, rest of under parts and inner side of limbs ochre yellow; hands and feet ochraceous; tail above for two thirds the length black and yellow, beneath yellow, apical portion black.

Measurements. Total length, 633; tail, 363; foot, 78; ear, 24. Skull: occipito-nasal length, 56; zygomatic width, 36; intertemporal width, 30; palatal length, 15; breadth of braincase, 35; median length of nasals, 8; length of upper molar series, 11; length of mandible, 31; length of lower molar series, 13.

This species was originally described from an example obtained at Chiriqui, and Dr. Frantzius states it is confined to the hotter region, being very abundant in the valley of Terraba and on the plain of Piris, and he believed its northern limit to be the spurs of the Herradura Mountains going towards the sea. A living individual was presented to the London Zoological Society by Mr. W. F. Kelley, who said it was procured in the Department of Solala, Guatemala, but no other example seems to have come from there and it is surmised that possibly Mr. Kelley's animal may have been brought from some southern locality.

Mr. Thomas has described the monkey from Pozo Azul, Costa Rica (l. c.) as a distinct race under the name of *S. œr. citrinellus,* the chief character being the head "less blackened and the limbs less yellow." A series of these monkeys from Panama collected by J. H. Batty and two specimens from Pozo Azul collected by M. A. Carriker, belonging to the New York Museum of Natural History are before me. In the Panama series every style of head coloring from jet black to gray is represented, some almost exactly like the examples from Pozo Azul, and the difference in coloration would seem to be due to age, the old adults having intensely black crowns, and this passing through all grades of coloring to the young animals with little or no black on the head. The type of *S. œr. citrinellus* in the British Museum has less black on the head than the old adults, and it does not go so far on the occiput, but other specimens from the same localities in the Museum collection have black crowns, and it does not seem that a distinct race can be sustained, knowing, as we do, the great diversity of head coloring that exists at different periods of the animal's existence. I have therefore placed *S. œr. citrinellus* as a synonym of S. ŒRSTEDI.

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